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BULLETIN

OF THE

ESSEX INSTITUTE,

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CONTENTS.

On the West Indian Teiidæ in the Museum of Comparative Zoology; by SAMUEL GARMAN,	1
West Indian Batrachia in the Museum of Comparative Zoölogy; by SAMUEL GARMAN,	13
On West Indian Geckonidæ and Anguidæ; by SAMUEL GARMAN,	17
On West Indian Reptiles. Iguanidæ; by SAMUEL GARMAN,	25
On West Indian Reptiles. Scincidæ; by SAMUEL GARMAN,	51
Annual Meeting, Monday, May 16, 1887,	55
Election of officers, 59; retrospect of the year, 62; meetings, 73; field meetings, 74; library, 78; publications, 90; rose show, 91; museum, 91; art exhibition, 92; financial, 93.	
On the Santhals, a semi-barbarous tribe of Northeastern Bengal; by SAMUEL KNEELAND,	95
Reptiles and Batrachians from Texas and Mexico; by SAMUEL GARMAN,	119

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 19. SALEM: JAN., FEB., MARCH, 1887. Nos. 1-2-3.

ON THE WEST INDIAN TEIIDÆ IN THE MUSEUM OF COMPARATIVE ZOOLOGY.

BY SAMUEL GARMAN.

THE greater part of the collection on which this notice is based was gathered for Professor Alexander Agassiz by the writer. The balance was purchased by the Museum from Messrs. F. Lagois, C. S. Cazabon, Dr. D. F. Weinland and others. As far as possible series were obtained, the better to enable one to fix upon the characteristics of the varieties of a species inhabiting several of the islands, or those of closely allied species from the same or different localities. In the result the number of species has been augmented, instead of reduced as was expected.

TUPINAMBIS NIGROPUNCTATUS *Spix*, 1825.

Specimens from Trinidad apparently have the scales somewhat larger and the femoral pores in greater number. The pores range from fourteen to seventeen. The species is called "Matt" by the natives.

CENTROPYX COPII, nom. sp. n.

Barbadoes.

"Back with three pale lines; dorsal scales, minute. Surinam, Mus. Leyd." is the original announcement, of his species *Centropyx intermedius* (Schleg.), by Dr. Gray, 1831, Syn. Rept., 31 (in Griff. Cuv. An. King., ix). In his Catalogue of Lizards B. M., 1845, he says *C. intermedius* is synonymous with *C. calcaratus*.

Professor Cope, 1861, Pr. Phil. Ac., 496, is the first to give a description which unquestionably applies to the *Centropyx* of Barbadoes. Whether Dr. Gray was right in his later conclusion in regard to what he had called *C. intermedius*, it is evident he was not acquainted with the Barbadian type. Hence it would appear preferable that the latter should bear the name of the distinguished naturalist who first made it known.

AMEIVA ATRIGULARIS.

A. surinamensis, var. n.

Nostril between the two nasals; five occipitals, longer than broad; four supraoculars, posterior three commonly separated from the supraciliaries by a series of granules of which the anterior is large and rhomboid in shape, third not separated from the postfrontals and not in contact with the frontal; six to seven supraciliaries; loreal undivided; six labials. Lower labials five to six; submentals one anterior and four pairs or more; gular granules much enlarged in a broad band across the throat, postgulars enlarged in the middle; mesopterygium with several rows as large as the largest gulars; no wedge-shaped backward intrusion between the pectorals on the chest. Dorsal granules small, smooth. Ventrals in twelve (twelve to fourteen) rows; transverse series thirty to thirty-two. Preanals irregular, commonly three large

shields arranged in a triangle, with a small plate wedged behind the suture of the posterior two, and the triangle itself arched around in front by about eight small plates of which the posterior are the larger. Three or four rows of medium-sized brachials, subcontinuous with the three or four rows of antebrachials; postbrachials in three or four rows, smaller than brachials. About ten rows of femoral plates, and five of tibials. Femoral pores sixteen to seventeen. Digits feebly serrated; fifth toe much shorter than inner. Caudals keeled.

Back, brownish olive, with closely placed spots or vermiculations of brown; flanks more olive, with or without dark-edged white spots; outer ventrals and thighs with large spots of white, or of black, or of both. Near the vent the lower surface is yellowish. The throat and chin are black on all except the young.

Small ones have a dark band along each side of the body at the upper edge of flank and tail; on the body near each edge of this band there is a series of small round white spots. Below the band the flank is lighter. On the front edges of the outer ventrals, on the femorals and on the base of the tail, there are black spots, and the throat is olive.

Hab. Trinidad.

AMEIVA AQUILINA.

A. surinamensis var. n.

Nostril between the two nasals; five occipitals; four supraoculars, posterior two separated from other head shields by granules, anterior one in contact with supraciliaries; loreal undivided; labials six to seven. Lower labials six to seven; submentals one anterior and four or five pairs; gular granules enlarged in a band, of eight series or more, across the throat; behind the gulars there

is another band of smaller ones; mesoptychials nearly as large as gulars, in six to eight series, reaching across the lower surface. Dorsal granules small, smooth. Ventrals in fourteen rows, outer small, transverse series thirty-one to thirty-three. Anteriorly on the chest there is no intrusion of granules between the median series of plates. Preanals most often in transverse series, two to six of the median plates enlarged; sometimes with three larger shields arranged in a triangle. Brachials moderate, in three or four rows, second row largest; antebrachials in three rows, outer broad; postbrachials small. Ten or eleven rows of femoral plates, and four or five of tibials. Femoral pores eighteen to twenty-two. Digits serrated; fifth toe shorter than inner. Caudals keeled.

Four of the specimens from Grenada have the frontal divided transversely, near its posterior extremity; the other four from the same locality are normal and agree with those from St. Vincent, thirty-nine in number, none of which possess the divided frontal shield.

Adults are brown on the back and more or less mottled with black. The flanks are darker in the upper half, more olive in the lower, marked with four to six longitudinal rows of small, rounded, dark edged spots of white. Beneath olivaceous, clouded or marked with lighter, and at the edges of the flanks marked with black. In front and beneath, the thighs are blotched with black and yellow. The white spots also form vertical or transverse series in many cases.

Young with a series of about seventeen transverse bands of brown, separated by spaces of equal width and bisected by a narrow line of lighter color along the vertebræ from the back of the neck. From the eye to the base of the tail a dark band runs along the upper edge of the flank; posteriorly it is broken into spots; along the body its

edges are deeply scalloped and in the concavities of the scallops there are white spots. Below the dark band a lighter one extends from the ear to the thigh; and below this on the flank there is another dark band with irregular edges which beneath are rendered more so by the lighter spots.

This lizard resembles *A. bifrontata* especially in regard to the division of the frontal in some specimens. It differs in having fourteen rows of ventrals, in the anal plates, in brachials, antebrachials, postbrachials, and tibials, in the femoral pores, and in coloration.

The specimens from St. Vincent appear to have a greater number of brighter, more distinct spots both of white and black and they have undivided frontals; beyond these I am unable to fix upon characters to distinguish them from the others.

AMEIVA FUSCATA sp. n. "

Nostril between the two nasals; occipitals irregular, six or more; supraoculars three; on one specimen a fourth hardly larger than the granules is present; supraciliaries seven to nine; loreal undivided; labials six to seven. Lower labials six to seven; submentals one anterior and six or seven pairs; gular granules much enlarged in a band across the throat; mesoptychium with a band, of six or seven scales longitudinally and about twenty transversely, in which the largest are larger than the gulars; two bands of slightly enlarged granules between the gular band and the fold. Dorsal granules small, smooth, larger than those of the flanks. Ventrals in fourteen rows, outer small; transverse series thirty-three. Pre-anal plates in a single longitudinal series of four larger, surrounded by smaller plates of which one at each side of

the posterior of the larger series is largest. Three or four rows of small brachial plates, second row largest; antebrachials one row of large and three rows of small ones; postbrachials small. Eight or nine rows of femoral plates and five of tibials. Twenty-six to twenty-eight femoral pores. Digits serrated; fifth toe shorter than the inner. Caudals keeled.

Dorsal surface of body, head and legs uniform olive brown; flanks darker to black with three series of white spots, the first of which extends along the upper edge to the base of the tail, the second is the more irregular and extends on the thigh, and the third runs along the outer series of ventrals. Lower surface olivaceous, darker under throat and fold, lighter and yellowish near the vent and under the legs. Under the fold the throat is white. Tail sprinkled with brown.

Young ones are lighter colored and have a narrow light line along the upper edge of each flank and a second half way down the side including between them a darker band on which posteriorly there are a few lightish spots.

Hab. Dominica.

AMEIVA PLUVIANOTATA sp. n.

Nostril in the posterior border of the anterior nasal; occipitals irregular, seven or more; four supraoculars; seven or eight supraciliaries; loreal undivided; six labials. Six lower labials; submentals one anterior and five pairs. Enlarged gular granules form a band of eight or ten series across the throat, median larger; mesopterygium with several rows of enlarged scales, of which those toward the sides are larger than the median and larger than the gulars. Dorsal granules very small, smooth, median slightly enlarged. Ventrals in fourteen rows, transverse series

thirty-six. There are two types of preanals: the first has a median longitudinal series of four or five of which the posterior one is small and the others from the next in front of it decrease in size forward, and at each side of the longitudinal there is a short transverse series of two scales or more; the second type has the small posterior scale of the median series separated from the next in front by the middle pair of a continuous transverse row. In the latter the arrangement is similar to that of *A. rissii*. Four or more rows of small humeral plates, not continuous with the antebrachials. Antebrachials in three rows, posterior broad. Postbrachials few, largest two equal in size to humerals. Seven or eight rows of femoral plates; four rows of tibials. Femoral pores twenty-nine to thirty-four. Digits serrated; inner toe a little longer than outer. Caudals keeled.

Large specimens brownish olive on back and head; posteriorly and on legs and tail freckled with greyish. Throat, chest and arms dark olive, lighter and freckled with light posteriorly; lower surfaces of legs white.

On smaller specimens the color of the back is lighter, with faint indications of a series of dark spots on each side of the middle; the grey plashes are more numerous and distinct and on arms and legs they are smaller, closer together and brighter. The flanks have numerous greyish spots and at the upper edge and on the base of the tail there is a dark band with indistinct margins. The lower surfaces are light olive.

On some the dark color surrounding the grey spots is more intense; these might be described as reticulated with brown. Very small specimens are without white lines, but the color is somewhat lighter at the upper edge of the dark band on the flanks.

Hab. Montserrat.

*AMEIVA ATRATA.**A. corvinæ* var. n.

Nostril in the posterior part of the anterior nasal; occipitals short, five to seven; supraoculars four, posterior half as large as the anterior; supraciliaries seven; loreal not divided; labials six. Lower labials five to six; submentals one anterior and five to six pairs; slightly enlarged gular granules in about twelve series across the throat; mesoptychium with a band of about half a dozen series, in which the largest ones are toward the sides of the neck and larger than the gulars. Dorsal granules small, smooth. Ventrals in fourteen rows; transverse series thirty-six. Preanal plates in a transverse series of four to twelve, outer very small, median pair large; there is a small plate behind the suture of the median pair, and in front of this suture there is another pair of large plates placed one in front of the other. Around the latter pair there is an arch, of five or more smaller scales, which continues laterally as transverse series. Four series of very small brachials, not continuous with the five series of comparatively small antibrachials more than half of the larger of which are subdivided. Post brachials few, small, similar to brachials. Nine or ten rows of femoral plates; four to five rows of tibials, outer large. Femoral pores twenty-nine to thirty. Digits feebly serrated; outer toe a little longer than the inner. Dark brown above; dark olive beneath.

In comparison with type specimens of *A. corvina* from Sombrero and from Hayti, this form shows greater enlargement of granules on throat and mesoptychium, larger scales in the group on the chest wedged between the pectoral plates, on the median line behind the fold, and larger brachials. The third supraoculars are not separated from frontal and postfrontals. On all the specimens of *A. cor-*

vina at hand the third supraocular is separated from the angle of the frontal by the elongate anterior granule of the series.

Hab. Redonda.

AMEIVA ERYTHROCEPHALA.

Lacerta erythrocephala Daud., 1802, Rept., iii, 122.

Nostril between the two nasals; five occipitals; four supraoculars, posterior small, posterior two separated from other cephalic shields by granules; six or more supraciliaries; loreal undivided; seven labials, third and fourth largest. Six lower labials, third largest. Submentals one anterior and six or seven pairs, second and succeeding separated from the lower labials by enlarged granules or small scales; median gulars somewhat enlarged, as also some others at each side of these about half way to the ear; three series of about five enlarged scales each on the mesoptychium, and around these one to several series of small ones which shade into the surrounding granules. Dorsal granules very small, uniform, smooth. Ventrals in fourteen rows, thirty-six transverse series. A pair of moderate sized median preanals, at each side of which there are two or three smaller ones and in front of which there is a single longitudinal series of two or three. Brachials in four or five series, as large as the enlarged gulars; antebra-chials in one series of four to six broad plates and three or four of small ones; postbrachials small. Femoral shields in six rows; tibials in five, outer large. Digits serrated; outer toe longer than the inner. Femoral pores thirty-seven to thirty-nine. Granules separate the first three or four series of plates on the median line of the chest.

Back olive with narrow transverse lines of black, more or less crooked and reticulated. Thorax, upper arm and flanks blackish. The black includes more or less of the

fold, on the breast and in front of the arms. The head is red, brownish above and white below after the red has disappeared in the alcohol. Limbs olive reticulated with brown or black.

On younger specimens the back is lighter in color, the transverse lines are more distinctly limited and disconnected from similar vertical streaks on the flanks, and the thorax and flanks are olive. Some have on the fore part of the body at the upper edge of the flank a faint line of light. The darker colors lie at the lower edges of the flanks, where there is a tendency to black margins on the scales. The bellies of some are olive, of others yellowish.

On very young ones the light line at each edge of the back extends from the neck to the base of the tail. Half-way down the flank there is another streak extending from the arm to the femur.

Thirty-four specimens were secured on St. Christopher's. They leave no doubt as to the identity of the species and make it evident that the *A. erythrops* from St. Eustatia is not entitled to more than varietal distinction.

AMEIVA ANALIFERA Cope, 1869.

The femoral pores range from twenty-one to twenty-five. St. Barts.

A variety of this species is found on Anguilla. It differs slightly in squamation, but is easily distinguished by the color; lighter brown anteriorly, with large light grey or olive spots posteriorly, which gives the hind legs the appearance of being grey reticulated with brown.

AMEIVA CORVINA Cope, 1862.

Between representatives from Sombrero and others from Hayti there is apparently very little difference.

AMEIVA RIISI *Reinh. Lütke.*, 1862.

Porto Rico specimens appear to be a little lighter in color, more red on the back and head, and have the whitish frecklings on the hinder part of the body and the base of the tail, as also the dark spots along the flank, less numerous and distinct than those from St. Thomas. The latter have the colors a trifle darker, more olive, and the white specks and the black spots less faded.

AMEIVA LINEOLATA *D. & B.*, 1839.

The series exhibits a gradation from the keeled to the smooth caudal scales. A very dark throat marks the largest specimen.

Hayti and San Domingo.

AMEIVA TÆNIURA *Cope*, 1862.

This species has a larger number of large preanal shields, and the enlarged granules of the mesopterygium are smaller than in *A. lineolata*.

Jeremie, Hayti.

AMEIVA DORSALIS *Gray*, 1838.

A very common species in the neighborhood of Kingston, Jamaica, where it was the only one captured.

AMEIVA AUBERI *Coct.*

Not at all rare at Bahia Honda, Cuba.

AMEIVA THORACICA *Cope*, 1862.

Femoral pores twenty-four in one specimen, twenty-eight in others.

New Providence, Bahamas.

SCOLECOSAURUS CUVIERI *Fitz. ; Blgr.*

Length of head and body two inches, of tail three and three-eighths. Longitudinal rows twenty-eight ; transverse series on the body forty-one, and on the tail eighty-six.

Hab. Grenada.

GYMNOPHTHALMUS PLEII *D. & B.*, 1839.

Twenty-two specimens were secured at Castries, St. Lucia, and others from Martinique. The former have seventeen rows of scales and agree closely with the latter.

Bocourt gives St. Lucia as the locality for *G. Lütkeni*; we failed to secure a specimen in all our collecting.

WEST INDIAN BATRACHIA IN THE MUSEUM OF COMPARATIVE ZOOLOGY.

BY SAMUEL GARMAN.

PHYLLOBATES TRINITATIS sp. n.

Trinidad.

Tongue subcordiform, free behind. Snout shorter than the diameter of the eye, broad, very blunt-angled at the end; nostrils nearer to the tip than to the eye. Loreal region vertical or slightly concave. Tympanum about half the diameter of the eye. When the leg is turned forward the tibio-tarsal articulation reaches the orbit. Skin smooth. Outer metatarsal tubercle small; disks about half as large as the tympanum.

Back greyish-brown with cloudings of darker or with blotches of brown along the median line; legs with transverse bands and arms blotched or banded with brown. A black band around the snout through the eyes, over the shoulders and along the flanks. Upper lips lighter; both lips grow dark with age. Fingers and toes ringed with brown. Ventral surface white; a dark band across the thorax. On one specimen of twenty the chin and throat are dark, and on all the older ones the dark color is inclined to spread backward on the chest.

HYLODES MARTINICENSIS *Tschudi*.

Martinique; St. Kitts; Sabá; Dominica; Bayamon, Porto Rico.

HYLODES LENTUS Cope.

St. Thomas; Puerto Plata, San Domingo.

In the specimen from St. Thomas the vomerine teeth are somewhat separated on the median line; these teeth are continuous from side to side in the form from San Domingo. The latter has the upper surface of the legs and the hinder half of the body of a bright-red color in life.

HYLODES LUTEOLUS Gosse; *Gthr.*

Kingston and Moneague, Jamaica.

HYLODES RICORDII Dum. *Bibr.*

Matanzas, Cuba.

LEPTODACTYLUS PENTADACTYLUS Laur.; *Ptrs.*

St. Kitts; Dominica.

LEPTODACTYLUS LONGIROSTRIS Blgr.

Trinidad.

This frog is placed here with some hesitation. On the middle of the flank there is a fold, forming a narrow, white streak, and at the upper edge there is a similar one, more pronounced backward. The back is irregularly spotted with light-edged spots of brown.

LEPTODACTYLUS ALBILABRIS *Gthr.*; *Blgr.*

Bayamon and San Juan, Porto Rico.

Very abundant.

LEPTODACTYLUS VALIDUS sp. n.

Kingston, St. Vincent.

Tongue oval, slightly nicked behind. Vomerine teeth in two short, slightly arched series behind the choanæ. Snout short, as long as the eye, blunt, canthus depressed, rounded, nostril nearer to the tip than to the eye. Interorbital space near the width of the supraorbital. Tympa-

num nearly three-fourths as wide as the eye. A glandular fold above the tympanum; another behind the angle of the mouth. Digits slightly swollen at the tips; fingers moderate, first a little longer than second; toes slender, with a narrow fringe; outer metatarsal tubercle small and indistinct; articular tubercles well developed. When turned forward the tibio-tarsal articulation reaches the eye. Skin smooth; no folds on the flanks. The hinder part of the body bears numerous very small papillæ, in cases scattered over the whole body. Ventral fold indistinct or absent. Male with an internal subgular vocal sac, and two strong conical tubercles on the inside of the first digit.

Brown; a whitish band across the supraorbitals on the forehead; a dark blotch from the orbits to an ashy spot on the middle of the back; with dark spots or cloudings on the hinder portion of the back, on the flanks and on the sides of the limbs. Legs, feet and digits with transverse bands of brown. Belly whitish; chin and throat mottled with brown, becoming dark in males. A white streak from the eye to the angle of the mouth, another below the eye, another down the end of the snout, and two others between the latter and the eye. These streaks become obsolete on very dark colored specimens; that from the eye is often continued to the shoulder where it meets a white mark around the arm. The minute papillæ are usually light-colored and often are surmounted by a black tip.

A male measures in length of body one and five-eighths inches and in leg two and three-eighths; a female is one and three-fourths in body and two and a half inches in length of leg.

BUFO MARINIS L.; Schneid.

Trinidad; Grenada; Barbadoes; St. Lucia; St. Kitts; Martinique; Nevis; Montserrat; Jamaica.

At Nevis it was said that these toads had recently been introduced from Barbadoes because it was thought they were hostile to rats.

BUFO PELTOCEPHALUS (*Bibr.*) *Tschudi.*

Cuba.

BUFO GUTTUROSUS *Gthr.*

Port au Prince, Hayti; Cuba; Bayamon, Porto Rico.

A very young one resembles small specimens of *B. lentiginosus*. It has transverse blotches of brown on legs and arms. On each side of the middle on the back there is a series of rounded brown spots, four or five, each containing a red wart. Each lip has several spots, one below the eye.

HYLA SEPTENTRIONALIS *Tschudi; Blgr.*

Bahamas; Cuba.

At Havana on the thirtieth of December the writer took a large number of young ones: larvæ with hind legs, small specimens with the remnant of the tail, and others twice the size of the latter to the adult.

HYLA INSULSA *Cope; Blgr.*

Cuba.

HYLA DOMINICENSIS (*Bibr.*) *Tschudi; Blgr.*

Puerto Plata, San Domingo; Isle des Vaches.

HYLA OVATA *Cope; Blgr.*

Jeremie, Hayti.

HYLA PULCHRILINEATA *Cope.*

Puerto Plata, San Domingo.

HYLA PARDALIS *Spix.*

Trinidad.

ON WEST INDIAN GECKONIDÆ AND ANGUIDÆ.

BY SAMUEL GARMAN.

GONATODES VITTATUS (*Wieg.*) *Licht.*; *Blgr.*

The females are grey, with scattered spots or with cloudings of brown. There are faint indications of a light vertebral line, but it is very indistinct and has not the black edges present in the males. The ventral surface is light-colored, without the steel blue markings of the belly or the black bars of the throat on the other sex.

Very young specimens are grey, flecked with white spots. These spots form eight or ten transverse series in which each of the larger spots is margined in front by a brownish blotch. The spots also form longitudinal rows, one of them lying at each side of the faintly defined vertebral band.

The eggs are elliptical in longitudinal section, the long axis being five and the short about four sixteenths of an inch.

Twenty-three specimens and a number of eggs were taken at Port of Spain, Trinidad.

THECADACTYLUS RAPICAUDA *Houtt.*; *Gray.*

Trinidad, Grenada, St. Lucia, Dominica, Guadaloupe, Saba, St. Barts and Anguilla are represented in the collection.

Those from Saba and Dominica are darkest in colors; those from Grenada are rather light; and those from Trinidad are reddish in ground color with the brown bands much more distinct.

HEMIDACTYLUS MABOUIA Mor.; D. & B.

Specimens are at hand from Trinidad, St. Lucia, Petit Martinique, Martinique and Porto Rico.

Those from Trinidad are very rough with trihedral tubercles, and the latter are more numerous than on those from the other islands. The nearest approach is in specimens from Porto Rico, but on the mainland those from Para and Rio Janeiro are still more closely allied.

ARISTELLIGER PRÆSIGNIS Hallow.; Cope.

Grand Cayman.

ARISTELLIGER LAR Cope.

A single individual, the type, in the collection.
Jeremie, Hayti.

SPHÆRODACTYLUS ELEGANS (McLeay) Reinh. & Lülk.

Of three specimens from Remedios, Cuba, each has eleven transverse bands between the eyes and the base of the tail; another has but ten. One from Caibarien, Cuba, has eleven.

SPHÆRODACTYLUS NIGROPUNCTATUS Gray, 1844.

A specimen from Samana, San Domingo, is referred to this species with some hesitation. The scales of the back and of the flanks are keeled; the latter and those of the belly are the larger; those of the head are very small. It is closely sprinkled with small spots of brown, in longitudinal rows.

SPHÆRODACTYLUS ALOPEX Cope, 1861.

The types are freckled somewhat by scattered small spots of light color, each occupying one or two scales.

Jeremie, Hayti.

SPHÆRODACTYLUS PUNCTATISSIMUS D. & B.; Gray.

A couple of specimens from Caibarien, Cuba, have narrow longitudinal streaks of brown, as figured by Cocteau, Rept. Cuba, pl. 18; a third is nearly uniform grey; and a fourth is thickly sprinkled with white dots.

SPHÆRODACTYLUS PICTURATUS sp. n.

Snout pointed, elongate, about one-half longer than the distance between the eye and the ear, or one and one-half times the orbital diameter. Ear-opening oval, oblique, as large as the digital expansions. Rostral large, with a median cleft at the upper edge; nostril between rostral first labial and three scales; four upper and four lower labials, anterior lower as long as the first two of the upper; mental large, meeting a pair of rounded small scales between the first pair of lower labials. Upper eyelid with a small, spine-like scale. Head covered with keeled, granular scales, larger along the median line and toward the rostral. Dorsal scales strongly keeled, imbricate, very large, largest about twice the diameter of the ventrals, in eight or nine series at each side of two or more vertebral series of granules; gular granules very small, larger toward the mental; ventrals moderate, imbricate, smooth; caudal scales imbricate, hinder margin rounded, anterior keeled, inferior a series of transverse plates.

Brownish. The head is marked with white in a narrow streak on each side from the rostral on the canthus and over the supraorbitals to the back of the head, in a median streak on the forehead, a rounded spot above each ear, another on the occiput and an oblique streak behind each ear upward to the back of the neck. A broad, black band crosses the back just in front of the shoulders, and

in it on each side there are two to three large, white spots; a similar band with spots crosses the middle of the body, and on each side of this band there is another of like pattern but lighter color. Backward on the tail the bands are less regular. On the young the four bands on the body are black. The limbs, lower surface of the tail, chin and cheeks are spotted with brown. The ventrals are lighter, punctulate with dark. On some in the brownish spaces between the dark bands light scales alternate with darker ones.

Possibly this species may prove identical with the *Sphærodactylus anthracinus* of Boulenger, 1885, from San Domingo; it appears, however, to be quite distinct from the *S. anthracinus* of Cope, 1861, from Mexico. It is most closely allied to the *S. fantasticus* of Dumeril and Bibron from Martinique and to the *S. pictus* from St. Kitts. Our specimens were obtained in western Hayti.

SPHÆRODACTYLUS PICTUS sp. n.

Snout blunt, not as long as the distance from the eye to the ear opening, less than one and a half times the diameter of the orbit. Rostral large, with a median cleft above. Nostril surrounded by the rostral, first labial, nasal and an internasal. Three to four labials; lower labials three to four, anterior long. Mental large, truncate posteriorly. A small, spine-like scale on the upper eyelid. Head covered with granular keeled scales, larger toward the snout. Scales of the body moderate, keeled on back and flanks; those of the belly larger. A couple of rows of granules separate the keeled scales above the vertebræ.

Greyish with three or four rows of brown spots on each side. On the snout there is a brown band from each eye

around the end; a median band meets these on the rostral. Behind the eyes, on the head, there are six longitudinal bands of brown, four of which join to form two on the occiput, and these meet the laterals on the neck forming two which are continued above the shoulders. A light line across the forehead from one orbit to the other. Two or three light streaks, across the back of the head and the neck, appear on some. On a very young one there are five narrow, transverse, dark-edged streaks of white between the eyes and the base of the tail. There are traces of brown blotches on the lower surface.

An egg with the specimens has a long diameter of one-third of an inch and a short one of one-fourth.

Hab. St. Christopher's.

SPHÆRODACTYLUS MACROLEPIS *Gthr.*, 1859.

There is some resemblance in marks between specimens from St. Thomas and *S. pictus* from St. Kitts; the latter have the vertebral series of granules, as in *S. Copii*.

An egg which apparently belonged to one of the specimens measures in its longer diameter one-fourth of an inch and in its shorter one-fifth.

From San Domingo, Porto Rico and St. Thomas.

ANGUIDÆ.

DIPLOGLOSSUS STRIATUS *Gray; Blgr.*

Careful study of the type of *D. stenurus* Cope convinces me that Dr. Boulenger is right in placing it in *D. striatus*.

The lateral teeth of the specimen are two-cusped, the posterior cusp being much the stronger. The tail is slen-

der, compressed and about one and two-thirds times the length of the body. The tips of toes and fingers overlap slightly when the limbs are pressed to the side.

Jeremie, Hayti.

DIPLOGLOSSUS CRUSCULUS sp. n.

Lateral teeth compressed, bicuspid, anterior cusp small or indistinct. Ear-opening as large as the eye-opening, oblong, vertical. A large azygos prefrontal, broader than long, in contact with the broadest loreal, little wider than the frontal, separated by two pairs of shields from the rostral; occipital smaller than the interparietal; nasal separated from the rostral by the first labial; a postnasal and two or three loreals, second broadest; the suture between the fifth and sixth or sixth and seventh labials falls below the middle of the eye. Submentals large, one anterior followed by four pairs, anterior three and part of fourth in contact with the lower labials. Body elongate, sub-round, depressed. Forty-two rows of scales around the middle of the body; dorsals slightly roof-shaped, finely striate, with twenty-one striæ on the middle of the back. Limbs short and weak; fingers not four times as long as thick; arm to the end of fingers reaching the anterior border of the ear; adpressed limbs not meeting by the length of the arm and hand; foot and leg two and one-third times in the distance from arm-pit to thigh.

Back brownish with closely placed narrow transverse or reticulated lines of brown; a narrow, light-edged dark streak along the upper edge of each flank, edges serrated; flank with scattered spots of white, less than a scale in size; darker lateral edges of scales under neck and head forming longitudinal streaks. Labials and other shields of the head with brown blotches.

Hab. Kingston, Jamaica.

DIPLOGLOSSUS COSTATUS.

Panolopus costatus Cope, 1861, Pr. Phil. Ac., 494.

Celestus phoxinus Cope, 1868, Pr. Phil. Ac., 123, 125.

Examination of the specimen that served as the type in founding the genus *Panolopus* shows that it had suffered considerably from mutilation, being deprived of its fingers and toes and badly wounded in the fore part of the head. In shape it is elongate fusiform, with a sharpness of angles on head and body that is in great part due to emaciation.

The arms and wrists are normal. The fingers have been carried away; this is proved by the differences in the stumps of hands and in the forms and sizes of the scales and callosities covering the healed surfaces. More of the hand remains on the right side than on the left; on the latter the extremity is more nearly conical; on the former it is more broad and flattened.

The legs and ankles also are normal. Excepting a short stump of each inner toe, the toes have been lost and with them a portion of each foot. The left stump is the more pointed. The callosities and scales covering the wounded portions are very different in shapes, sizes, numbers and arrangement on the two feet. Each foot is marked as if from unsuccessful attempts to cut it off nearer the ankle.

In front of the left eye there is a deep scar; a much deeper one is seen behind the second submental shields on the chin; and shallower evidence of healed wounds exists on the snout about and in front of the nostrils. A consequence of these wounds appears in the more or less complete fusion of rostral, nasals, supranasals, postnasals and the anterior three of the labials. The fusion is not entire; here and there portions of the dividing lines re-

main, and these with lines that appear through the scales, when out of alcohol for a short time, prove that the original disposition of the plates was much as in *D. occiduus*.

There are forty-four series of scales around the body. The coloration is as in *D. phoxinus*, except that the brown of the flanks is lighter, and that the small brown spots on the dorsal region are more numerous and a little more irregularly distributed.

The specimens from which the foregoing notices have been drawn belong to the Museum of Comparative Zoölogy at Cambridge, Mass.

ON WEST INDIAN REPTILES.

IGUANIDÆ.

BY SAMUEL GARMAN.

THIS notice contains a list of the species of Iguanidæ at present represented in the Museum of Comparative Zoology, at Cambridge, Mass., with localities and notes, and with descriptions of such as are new or little known. It includes a tolerable proportion of all the species hitherto recognized as belonging to this region, together with quite a number that do not appear to have been described. The list was prepared some years ago, but, owing to uncertainty in regard to some of the species discovered in the early part of the century, the types being inaccessible and the descriptions insufficient, it was laid aside until it might be put into more satisfactory shape. The splendid catalogues of Doctor Boulenger, recently published, have made it possible to identify with confidence many species which previously were, in the absence of typical specimens, only conjectural. The Doctor's classification has been followed pretty closely in the main; the departures made are principally due to differences of opinion concerning names adopted or the relative rank of certain forms. In answer to objections that may be urged against bringing varieties as prominently forward as is usual with species, it may be said that the nature of the case seems to demand it; abrupt separation and isolation on the different islands and consequent absence of gradual shading of the varieties, one into another, appear to entitle them to more prominence.

Unless otherwise specified the collections were made by the writer.

XIPHOCERCUS VALENCIENNII *Dum. Bibr.*, 1837.

A female has transverse bands of light brown on the limbs, a band across the neck, another immediately behind the shoulders and another in front of the thighs on the flanks; the tail is ringed with brownish; between the eye and the ear on each side of the head there is a quadrangular space enclosed by four short narrow lines of brown; a streak of light color extends from the loreal region beneath the eye to the angle of the mouth; the gular fold is purple with a creamy border; the lips are black; the upper and the lower surface of the head are whitish; there are short, narrow longitudinal streaks of brown arranged in transverse series on the flanks; and along the median line of the back there are several small, transverse blotches of brownish, with others of light color.

On a young one, less than an inch in length of body, the markings are similar though much lighter; a light brown band crosses the supraoculars and passes downward through the eye across the lips; vertical lines of brown cross both lips in front of the eyes; the gular fold is of a pink tint. In this little one the goitre is comparatively large, although the short snout, not longer than the orbit, convex on the upper surface, the disproportionate size of the eye and the bulged, swollen appearance of the parietal region indicate that it had been but a short time out of the egg.

Kingston, Jamaica.

ANOLIS EQUESTRIS *Merrem*, 1820.

There are five large specimens in the collection which are referred to this species. One of the lot is said to

come from Bahia, and, on examination of more individuals from the same locality, it may be found necessary to give a different specific name. It does not entirely agree with the others in shape in front of the eyes, where the rostral canthus curves outward more, making a broader snout. It differs to some extent in the squamation of the top of the head, but the scales are so confused it is difficult to discover the lines of separation. The number of lamellæ appears about the same as in the others.

Cuba; Bahia. ? Coll.

ANOLIS RICORDII *Dum. Bibr.*, 1837.

On a female from Samana, San Domingo, all of the supraoculars are keeled; the occipital scale is very small, hardly larger than the surrounding granules, but marked by the white spot in the centre; the color is a grayish brown, the light-colored transverse bands being sprinkled with brown scales and the brown spaces with lighter ones. Collected by M. A. Frazar.

ANOLIS CUVIERI *Merr.*, 1820.

A large specimen, presented by Dr. Aug. Stahl, of Porto Rico, is of a uniform bluish color, without the brown spots on the vertebral line; it is tinted with yellow beneath; the gular fold is yellow; and the frontal region and a streak from the loreal region beneath the eyes are whitish.

ANOLIS GUNDLACHII *Ptrs.*, 1876.

Young specimens have a vertebral band of yellowish color.

From Dr. Aug. Stahl, Porto Rico.

ANOLIS CRISTATELLUS *Dum. Bibr.*, 1837.

Collected by Professor Ackerman, Port au Prince, Hayti; Dr. D. F. Weinland, Jeremie, Hayti; J. A. Al-

len, St. Thomas; and S. Garman, Bayamon, Porto Rico, Morant Island and St. Thomas.

ANOLIS SCRIPTUS sp. n.

Head moderate, about one and three-fourths times as long as broad, nearly one and a half times the length of the tibia, with flat crown, very slightly concave on the forehead and on the occiput; frontal ridges low, diverging anteriorly; with three large blunt-keeled scales; upper head scales with low keels; scales of the supraorbital semi-circles large, in contact on the median line, or separated by a single row of small scales, continued as the frontal series; seven to nine enlarged, feebly-keeled supraoculars, separated from the supraorbitals by a single row of granules; occipital as large as the ear opening, separated from the supraorbitals by three or four series; rostral canthus sharp, of four scales; loreal rows four to six; six or seven labials to below the middle of the eye. Gular appendage moderate, smooth scaled. Body very little compressed, with a low dorso-nuchal fold. In the female, the goitre forms a low, longitudinal fold without the fan-like lobe. All scales obtusely keeled; dorsal and lateral granular, becoming larger toward a couple of rows of enlarged scales on the vertebral fold; ventrals larger than the dorsals, little smaller than the antefemorals, imbricate, with rounded posterior margins and feeble keels. Limbs moderate, the adpressed hind limb reaches the eye; digital expansions medium, twenty-two under phalanges ii and iii of the fourth toe. Tail compressed, slender posteriorly, more than twice the length of the body and head, with a sharp crest of unequal scales. On the male the neural spines support a fin-like expansion extending not more than half the length. Enlarged post-anal scales.

Gray, greenish, bluish, or brownish, bronzed, with or without spots or vermiculations of brown on nape, flanks,

chin and limbs; lips with or without brown spots. A young one has a large, rounded white-edged spot of brown above each shoulder; on another these spots are obsolete.

Readily distinguished from *A. cristatellus*, which it closely resembles, by the greater size of the two vertebral rows.

From Professor L. Agassiz; Silver and Lena Keys, Fla.

ANOLIS STRIATULUS Cope, 1861.

From Professor Ackerman, Port au Prince, Hayti; Dr. Aug. Stahl, Porto Rico; Hassler Expedition, St. Thomas.

ANOLIS GINGIVINUS Cope, 1864.

Dr. W. J. Branch, Anguilla Island.

ANOLIS BIMACULATA, Sparrman sp.

These notes are taken from forty-six specimens secured on St. Kitts. The species is usually confounded with several others to which it is somewhat closely allied. It is distinguished by the size of its granules, the four to five loreal series, the broad smooth plates in front of the thigh, the meeting of the opposite supraorbital series on the forehead, in seven specimens of each eight, and by the coloration.

The color is blue or green, grayish to brownish; white beneath. Posteriorly, on the flanks and on the tail, usually there are present a number of small spots of black, irregularly scattered but often forming a rounded bunch in front of the thigh on the side of the abdomen. Above the axilla there is most often a rounded black spot. Rarely it is continued forward as a band to the angle of the mouth. From the upper labials there is a light band crossing the upper half of the ear to end on the flank above the shoulder.

Above and in front of the shoulder, below the dark spot, there is another band of light color, and there are faint indications of a third from each side of the occiput to the nape. The lips are yellowish; generally each bears a series of dark spots, more or less numerous. Commonly the head, from the hinder edge of the orbits forward above the labials, is dark brown. The throat and neck are in cases clouded by darker. The prominent marks are the black spots above the axilla, the white patch in front of the shoulder, the dark mark behind the ear, and the small black specks. None of these specimens have series of ocellate spots on the flanks. We have specimens of this lizard from Nevis, also, where it is the "Blue lizard"; this raises the question as to the identity of Merrem's species with Edwards' lizard from Jamaica.

ANOLIS OCULATUS, sp. *Cope*, 1879.

At several points on Dominica a lot of eighty-one specimens was gathered. From them it is evident that the species should not be united with *A. bimaculatus* of Sparrman, although they discover a considerable amount of variation. In color they range from light grey to nearly uniform dark brown. On the majority the white marks form transverse series of six to eight spots each. A spot near the middle of the flank in each series is larger and more distinct than the others; in this way a longitudinal row is formed on each side which persists on specimens from which the transverse series have faded. In cases there is a short white line from the shoulder backward; occasionally there is also a second, parallel to the first, separated from it by a dark space. Above the shoulder, and a little backward, there is usually a dark spot including one of the white ones, often including a white one in each side of it, and behind this a short distance another,

the latter frequently followed by a third or a series. Some are freckled by white specks on body and tail. Many have dark spots on the upper edge of the tail. The bluish white spot on the occipital scale is always present.

The females are not so much spotted as the males and such marks as they have appear to be less distinct.

This species is separated from *A. bimaculatus* by its smaller scales, by the sharp keel on the largest scales in front of the thigh, by the greater number of loreal series, by the separation of the supraorbital series on the forehead, and by the coloration. It has six to eight loreal series and the supraorbitals are separated by one to three series of granules in seven of each eight individuals. There are about twenty-three lamellæ under phalanges ii and iii of the fourth toe. This may be one of the two species *A. maculatus* described by Dr. Gray, but it is not to be determined from his description.

Hab. Dominica.

ANOLIS ASPER, sp. n.

Head moderate, one and a half to one and two-thirds times as long as broad, longer than the tibia, crown flattened, cheeks swollen in the males; snout rather broad; forehead to occiput concave; frontal ridges low; upper head scales not keeled; scales of the supraorbital semi-circles broad, three pairs in contact on the median line, usually separated from the occipital scale, which is about the size of the ear-opening, by one to two rows; seven or eight indistinctly keeled supraoculars, smooth in young, most often in contact with the supraorbitals; rostral canthus sharp, straight, canthal scales three to four; loreal rows three to four; six labials to below the centre of the eye; ear opening rather small, vertically elongate. Gular fold moderate, small on the female; with smooth scales. Body

little compressed, male with a dorso-nuchal fold. Dorsal scales small, granular, keeled, rough to the touch, larger on the back than on the flanks; ventrals larger than dorsals, smooth under the abdomen; antefemorals larger than ventrals, keeled. The scales have a swollen appearance, and on the larger specimens might be described as sub-conical; this is especially marked near the occiput and among the larger ones of vertebral rows. The adpressed hind limb reaches the eye; digital expansions large; the lamellæ under phalanges ii and iii of the fourth toe number about thirty. Male with enlarged post-anal scales. Tail compressed, not twice as long as head and body, with a serrated upper edge, which in the male is borne on a broad fin-like expansion.

Greenish or olivaceous to reddish brown or grayish on the back and flanks, with or without cloudings of darker; forehead often darker; ventral surface lighter to whitish.

A series of more than thirty specimens was purchased from Mr. W. B. Richardson who secured them on the island Marie Galante.

Closely allied to *A. ferreus*, Cope, from Guadaloupe; distinguished by small lateral scales, three pairs of supra-orbitals in contact between the orbits, three to four loreal rows, etc.

ANOLIS MARMORATUS Dum. Bibr., 1837.

As has been remarked by Dr. Boulenger, this species is closely allied to *A. bimaculatus*. The principal distinction lies in the coloration. The average size of our specimens is much less; and apparently the snout is a trifle more pointed, with canthus and ridges sharper.

Hab. Desirade. W. B. Richardson, 52 ex.

ANOLIS NUBILUS, sp. n.

Head large, somewhat similar in shape to that of *A.*

cristatellus, but longer and more pointed at the snout; cheeks and parietal regions swollen, about one and two-thirds times as long as broad, much longer than the tibia; forehead and occiput slightly concave; frontal ridges distinct, but not high; upper head scales not keeled; scales of the supra-orbital semicircles large, more or less in contact on the median line; eight to twelve enlarged faintly keeled supraoculars; separated from the supraorbitals by a single series; occipital as large as the ear, separated from the supraorbitals by two or three series of granular scales; canthus rostralis sharp, prominent, of three scales; loreal rows four to five; six to seven labials to below the centre of the eye; ear opening moderate, subelliptical, higher than long. Gular appendage medium, small in the female, smooth scaled. Body compressed; dorso-nuchal fold distinct. Dorsal scales small, keeled, larger in a couple of rows on the dorsal fold; smaller on flanks; scales of belly larger, smooth, imbricate, posterior margin rounded; antefemorals still larger, keeled, five or six near the knee about twice as broad as long, with several keels. Limbs moderate, the adpressed hind limb reaches the eye; digital expansions rather large, lamellæ under phalanges ii and iii of the fourth toe about twenty-eight. Tail compressed, with a low crest of subequal compressed scales, one of each four being a trifle larger and marking the segments, less than twice as long as head and body. Male with enlarged post-anal scales.

Grayish olive to olivaceous or reddish brown, with or without specks of light color on flanks and legs. With indistinct cloudings of darker, forming transverse bands on the tail and frequently also on the body. Ventral surface whitish; throat, at sides of the gular fold, darker.

Hab. Redonda. W. B. Richardson.

ANOLIS CEPEDII Merrem, 1820.

St. Pierre, Ft. de France, and Morne Rouge, Martinique. Seventy-four specimens.

ANOLIS GENTILIS, var. n.

Head moderate, about one and two-thirds times as long as broad, longer than the tibia; forehead with very little concavity; frontal ridges low; upper head scales smooth; scales in the supraorbital semicircles enlarged, the anterior one in each as large as three of the other four, the anterior four of each series in contact with the opposite four, and the hinder pair of each in contact with the enlarged occipital; the scales forward from the largest supraorbital rather small; internarials narrow, elongate; nine to fourteen enlarged feebly keeled supraoculars; canthus rostralis angular, canthal scales five or six; loreal rows four, rarely five; six or seven labials to below the centre of the eye. Ear opening half as large as the occipital scale, vertically oblong. Gular appendage moderate, covered with smooth scales. A low dorso-nuchal fold. Dorsal scales keeled, small, larger in two or more of the vertebral rows, smaller on the flanks; ventrals still larger than the dorsals, smooth; antefemorals larger than the ventrals, keeled. The adpressed hind limb hardly reaches the orbit; digital expansions larger than the average, twenty-two lamellæ under phalanges ii and iii of fourth toe. Male with a pair of enlarged post-anal scales. Tail compressed, twice as long as head and body; a dorsal series of large compressed subequal scales forms a crest; ventral series large, and strongly keeled in the two median rows.

Light grayish brown, with greenish, yellowish, or metallic tints; whitish beneath; with five to seven broad transverse badly defined bands of brownish between the head and the tail; legs and arms with similar bands; body

freckled or clouded with faint small blotches of brown and occasionally a few black spots. Tail ringed with broad bands and head clouded with brownish. A very young specimen has a dark edged vertebral band of light color which is not crossed by the transverse marks.

This variety of *A. cepedii* is known from twenty-five specimens taken by the writer on Petit Martinique, one of the Grenadines.

ANOLIS CINEREUS, var. n.

This variety of *A. cepedii* differs from *A. trinitatis* in being more olive or bluish; the legs show more of the lilac color, and, on our specimens, the transverse bands are obsolete. The color is intermediate between that of light-grayish varieties, from Trinidad and Petit Martinique, and the brownish, from Barbadoes.

Hab. Grenada. Twenty-four specimens.

ANOLIS TRINITATIS Reinh. & Lützk., 1862.

This form has a lighter, more grayish color than the other varieties of *A. cepedii*, and in consequence the transverse bands and the small black or brown spots are more distinct.

Hab. Trinidad. Twenty-five examples, C. S. Cazon and S. Garman.

ANOLIS EXTREMUS, var. n.

Head moderate, more than one and a half times as long as wide, much longer than the tibia; forehead and occiput concave, deeply so in old specimens; frontal ridges prominent, diverging; snout about one and a half times the length of the space between eye and ear; upper head scales more or less rough; scales of the supraorbital semicircles large, three or four pairs in contact across the interorbital space, anterior one of each series very large,

preceded by small ones in the frontal rows; ten to twelve enlarged, keeled supraoculars, separated by two series of granules from the supraorbitals; occipital larger than the ear, elongate, in contact with the supraorbitals; rostral canthus distinct, of one long and three smaller scales; loreal rows four to five; five to six labials to below the centre of the eye; ear opening moderate, vertical diameter longest. Gular appendage large, smooth scaled. Body compressed; a dorso-nuchal fold, surmounted by two rows of slightly enlarged carinate scales. Dorsal scales small, keeled, subhexagonal, smaller on the flanks. Ventrals little larger than the vertebrals, smooth, imbricate, posterior borders rounded; antefemorals larger, faintly keeled, one or two rows near the knee tricarinate. Adpressed, the hind limb hardly reaches in front of the ear; digital expansions moderately large; lamellæ under phalanges ii and iii of the fourth toe about twenty-seven. Tail slightly compressed, with a low crest of broad, keeled, subequal scales. No enlarged post-anal scales.

Grayish-brown to brown or to olive; with transverse bands which pass obliquely backward down the flank, sometimes separated by lines of small, white spots, and in cases the posterior margins are whitish. Belly white, tinged with olive toward flank and thorax; throat brown at side of goitre, often clouded under the chin.

Young, rusty brown, with transverse bands on back, tail and limbs; frequently a vertebral series of black spots, each of which is white-edged posteriorly.

Hab. Barbadoes. A variety of *A. cepedii*. Thirty specimens, Hassler expedition and S. Garman.

ANOLIS GRISEUS, sp. n.

Head large, one and two-thirds to one and three-fourths times as long as broad, shaped like that of *A. cepedii*,

medium to large specimens with three pairs of ridges on the top, concave on forehead and occiput, longer than the tibia; snout depressed; prefrontal ridges low, forming an acute angle between the nostrils, not meeting the supra-orbitals; upper head scales rough; scales of the supra-orbital semicircles enlarged, separated from each other by two (one to three) series and from the occipital by one series of small scales; occipital twice as large as the ear opening; eight to twelve enlarged, keeled supraoculars, separated from the supraorbitals by one row of granules; rostral canthus sharp, of four scales; loreal rows four to five; five to six labials to below the centre of the eye; ear opening small, vertical diameter largest. Gular appendages large, smaller in the female, scales indistinctly keeled. A dorso-nuchal fold. Dorsal scales keeled, small, larger at the sides of the two rows of large, compressed, elongate, keeled scales forming the crest on the fold, smaller on the flanks; ventrals carinate, larger than the dorsals, excepting the crest; antefemorals keeled, little larger than the ventrals, if we except a couple of scales immediately on the knee. Limbs long, the adpressed hind leg reaches in front of the eye; digital expansion moderate, about twenty-nine lamellæ under phalanges ii and iii of the fourth toe. Tail compressed, with a crest in which the large scales are nearly equal, close upon two and a half times as long as both head and body.

Grayish to brownish or olivaceous, clouded, freckled, or spotted with brown and white. Sometimes with a few rounded spots of black about the shoulders; in such cases the spots are arranged in series which descend backward from the crest. Many have an indistinct brownish band across the shoulders, the middle of the body, the femur and the tibia; they also have bands across the digits and

the tail. Top and sides of head usually dark. Ventral surface whitish.

Hab. St. Vincent. Twelve specimens.

ANOLIS TROSSULUS, sp. n.

Head rather large, about one and two-thirds times as long as wide, as long as the tibia; snout moderately broad, one and a half times as long as the distance from eye to ear; forehead and occiput concave, deeply so in large specimens; frontal ridges low, short; some of the upper head scales keeled; scales of the supraorbital semicircles large, partly in contact or entirely separated between the orbits; nine to fifteen enlarged, keeled supraoculars, in contact with or separated from the supraorbital semicircles; occipital larger than the ear opening, in a cup-shaped depression, in contact with or separated from the supraorbitals; rostral canthus angular, canthal scales two large and two small; loreal rows five (four to six); five to six labials to below the centre of the eye; ear opening medium, vertical diameter twice the longitudinal. Granules on the swellings behind the occipital very small. Gular appendage large, extending backward of the arms, its scales small, keeled. Body compressed; dorso-nuchal fold surmounted by two rows of enlarged, strongly-carinate scales. Dorsal granules small, rough to the touch, with strong keels, larger toward the vertebral rows, smaller toward the flanks; ventral scales larger than the dorsals, hexagonal, juxtaposed, strongly keeled; antefemorals larger, imbricate, keeled, tricarinate in two rows near the knee. Limbs strong; adpressed, the hind limb reaches the anterior border of the eye; digital expansions not large; lamellæ under phalanges ii and iii of the fourth toe about twenty-six. Tail compressed, near two and a half

times as long as head and body, crested above by large subequal strongly keeled scales; no fin-like expansion. Post-anal scales not enlarged. Total length of large specimen fourteen inches.

Reddish-brown to light-grayish or bluish; tail with faintly indicated transverse-bands of brown; head darker, frequently with white spots on the supraorbitals or on the back of the head; chin and lips white to brownish, blotched or clouded with dark. Ventral surface whitish, tinted with blue or olive toward the flanks. Young with a brownish-vertebral band and limbs freckled with small spots of lighter or darker.

Hab. Grenada. Sixteen specimens.

ANOLIS GRAHAMII Gray, 1845.

This lizard was found to be very numerous in the neighborhood of Kingston, Jamaica.

ANOLIS CONSPERSUS Garman, 1887, Pr. Am. Phil. Soc.

The specimens from which this species was described, eighty-seven in number, were collected on the island Grand Cayman by Mr. W. B. Richardson.

ANOLIS SABANUS, sp. n.

Head moderate, about one and three-fourths times as long as broad, longer than the tibia; snout broad; cheeks but little swollen in the male; forehead and occiput concave, former with two distinct ridges. Upper head scales smooth; scales of the supraorbital semicircles large, anterior twice as long as wide, in contact between the orbits, rarely separated by a single row of granules, continued forwards, in the frontal series, decreasing in size, to the nostrils; eight to eleven enlarged feebly keeled supraocular scales, separated by a single series of granules from the supraorbitals; occipital as large as or larger than the

ear-opening, separated from the supraorbital series by one to three rows of small scales; rostral canthus sharp, of four or five scales; loreal rows four to five; six or seven labials to below the centre of the eye. Ear opening moderate, vertical diameter elongate. Gular appendage large in the male, with smooth scales. A low dorso-nuchal fold bearing a couple of rows of larger, blunt keeled scales which increase in size toward the middle of the body. Body slightly compressed. Dorsal scales small, obtusely keeled, larger than those on the flanks, much smaller than the (smooth or faintly keeled) ventrals. The adpressed hind limb reaches the eye; digital expansions moderate, twenty-five lamellæ under phalanges ii and iii of the fourth toe. Tail somewhat compressed, not twice the length of head and body, with unequal-sized scales, which mark the segments; crest low in female, higher in male. All of our specimens are adult, but none bear the fin-like expansion of *Xiphosurus*. Enlarged post-anal scales on the male.

Light grayish or yellowish brown profusely spotted with large spots of black, separated by spaces of equal width, often confluent on the back and behind the head; the three series, or lines, on each side of the head, the median from the eye, converge toward the back of the neck. On the flanks there are three to four rows of spots, arranged in ten or a dozen transverse series, the upper of which are frequently confluent, forming transverse bands. The top and sides of the head are yellowish, and spotted with large black spots. The ventral surface is whitish. On a female the ground color is a little darker and the spots less distinct and more elongate.

Eggs supposed to belong to this species—sent with a lot made up entirely of males—have a leathery envelope and measure in length about five-, and in width about three-tenths of an inch.

This species has been reported only from the island of Saba, whence thirteen specimens were sent us by Mr. F. Lagois and others.

ANOLIS VIRGATUS, sp. n.

Head rather large, one and two-thirds times as long as broad, much longer than the tibia; forehead hardly concave in adults, frontal ridges distinct, occipital scale in a concavity; upper head scales faintly keeled; scales of the supraorbital semicircles large, continuous forward with the frontal series, in contact or separate mesially; five to ten enlarged feebly keeled supraoculars, partially or entirely separated from the supraorbitals by a single row of granules; rostral canthus angular, of four scales; occipital scales usually larger than the ear-opening, separated from the supraorbital semicircles by one to three series of granular scales; loreal rows five; six or seven labials to below the centre of the eye. Ear-opening small, vertically oblong. Gular appendage medium, covered with smooth scales. No dorso-nuchal fold. Dorsal scales keeled, granular, little larger than those on the flanks, slightly larger at the sides of two enlarged vertebral rows; scales around the occipital and on the parietal prominences larger; ventrals much larger than the largest dorsals, smooth, imbricate; three or more rows of broad, smooth, antifemorals. The adpressed hind limb reaches the eye; digital expansions medium; twenty-three lamellæ under phalanges ii and iii of the fourth toe. Tail compressed; serrated on the upper edge in a crest in which the large scales are separated from each other by a pair each of which is about half as large. Males with a pair of enlarged post anal scales, in contact or separated by a single scale.

Gray; white beneath. On back and flanks there are

numerous longitudinal streaks or elongate spots of dark brown, in cases forming vermiculations; a whitish band extends from the arm above the axilla along the flank to the hinder part of the thigh or the base of the tail; tail with indistinct transverse bands of brownish; back, in cases, with faint cross bands.

The types from which this description is taken are fifteen specimens collected by Mr. F. Lagois on the island St. Bart's.

ANOLIS DISTICHUS Cope, 1861.

About forty specimens are in the collection. They were secured at Jeremie, Hayti, by Dr. Weinland, at Samana and Puerto Plata by M. A. Frazar, and at Isle des Vaches, western Hayti, by the writer.

ANOLIS CYBOTES Cope, 1862.

From Jeremie, Hayti, Dr. Weinland; and Samana, San Domingo, M. A. Frazar.

ANOLIS HAETIANUS, var. n.

A variety of *A. cybotes* which is introduced under this name, from Tiburon, Hayti, has keeled ventral scales and eight to ten rows of loreals. The canthus rostralis is very prominent laterally and makes a curve considerably rounded or convex upward.

ANOLIS CITRINELLUS Cope, 1864.

From Port au Prince, Hayti; Prof. Ackermann.

ANOLIS SPECIOSUS, sp. n.

Head moderate, one and two-thirds to one and three-fourths times as long as wide, longer than the tibia; forehead and occiput slightly concave; frontal ridges low; upper head scales rugose; scales of the supraorbital semi-

circles large, continuous forward as frontal series, most often separated between the orbits by a single series of granules, occasionally in contact; six to twelve enlarged supraocular scales, smooth or with a faint keel, separated from the supraorbitals by a single series of granules, sometimes in contact; occipital about as large as the ear opening, separated from the supraorbitals by two (one to three) series; canthus rostralis distinct, scales three or four, loreal rows four to five; seven to eight labials to below the centre of the eye; parietal granules enlarged, convex; ear opening small, vertically widest. Gular appendage small, scales smooth or faintly keeled. Body slightly compressed, a very low dorso-nuchal fold surmounted by several rows of enlarged keeled granules. Dorsal granules small, a little enlarged at the sides of the dorsal fold. Ventral scales large, imbricate, faintly keeled, posterior margin rounded. Antefemorals larger, with low keels. Limbs moderate, the adpressed hind limb reaches the orbit; digital expansions rather small; about twenty-four lamellæ under phalanges ii and iii of the fourth toe. Tail compressed; with a low crest of large subequal scales, those marking the segments slightly larger; nearly twice the length of head and body. Enlarged post-anal scales.

Body uniform greenish to olivaceous blue, legs and head brownish; lighter beneath, clouded with brownish on the chin, throat and anterior portion of the goitre. No white spots.

A small species, reaching the size of *A. principalis*. Common on Marie Galante, whence our specimens were brought by Mr. W. B. Richardson.

ANOLIS LIVIDUS, sp. n.

Head moderate, one and two-thirds to one and three-fourths times as long as wide, much longer than the tibia; occiput and frontal regions slightly concave; frontal ridges

distinct, low ; upper head scales not keeled ; scales of the supraorbital semicircles large, continuous forward with the frontal series, usually one of each in contact across the interorbital space ; eight to twelve enlarged supraoculars, smooth or with a low tubercle on the centre, separated from the supraorbitals by one series of granules ; occipital scale larger than the ear opening, separated from the supraorbitals by one series or more ; rostral canthus angular, of four scales ; loreal rows five ; six labials to below the centre of the eye ; ear opening medium, vertical diameter longer. Gular appendage moderate, smooth scaled.

Body little compressed, dorso-nuchal fold slight. Dorsal scales small, granular, keeled, enlarged near the large ones of the median rows ; ventrals large, carinate, imbricate, posterior border rounded ; antefemoral scales larger than ventrals, keeled. Limbs moderate, adpressed the hind leg reaches the eye ; digital expansions rather large ; lamellæ under phalanges ii and iii of the fourth toe about twenty-five. Tail compressed, rough, serrated on the upper edge by large scales of which that marking the end of a segment is somewhat larger, less than one and a half times as long as head and body. Male with enlarged post-anal scales.

Blue to olive or brownish ; head lighter, yellowish to yellowish brown, a light streak along the upper lip ; belly lighter, yellowish posteriorly ; legs whitish beneath. The back is uniform or sprinkled with indistinct small spots of whitish on neck and shoulders, rarely on the flanks. Young ones are light grayish and have a dark-edged vertebral band of light color, which is sometimes crossed by hour-glass-shaped transverse bands of brown.

Hab. Montserrat. Fifty-three specimens.

ANOLIS LUCIÆ, sp. n.

Head longer than the tibia, one and three-fourths times

as long as broad ; snout depressed, twice as long as the distance from orbit to ear ; forehead and occiput deeply concave ; frontal ridges distinct, having the appearance of dividing into two or three anteriorly ; a few only of the upper head scales keeled ; scales of the supraorbital semicircles large, not separated between the orbits ; eight to twelve enlarged, smooth to feebly keeled supraocular scales, in contact with or separated from the supraorbitals, by a single series ; occipital about twice as large as the ear opening, in contact with the supraorbitals ; rostral canthus not prominent, of five scales ; loreal rows four to five ; six to seven labials to below the centre of the eye ; ear opening small, twice as high as long. On large specimens the supraorbital ridges become very prominent and continued backward enclose a cup-shaped depression on the occiput ; the parietal granules are greatly enlarged. A couple of rows of much enlarged granules extend back from the orbit and bend down toward the ear. Gular appendage moderate, smooth scaled. Body hardly compressed, dorso-nuchal fold indistinct, marked by a couple of rows of enlarged keeled scales. Dorsal scales small, very irregular in sizes, six or eight rows of the vertebrales enlarged and keeled, those on the flank smaller. Ventrals larger, subhexagonal, juxtaposed, smooth. Limbs medium ; adpressed, the hind leg reaches a little in front of the ear ; digital expansions moderate ; lamellæ under phalanges ii and iii of the fourth toe about twenty-seven. Tail feebly compressed, nearly twice as long as head and body, serrated on the upper edge with low subequal strongly keeled scales. No enlarged post-anal scales.

Grayish to brownish olive, with or without faint transverse bands of brown on the anterior portion of the body and on the tail ; more blue on the flanks and beneath ; head darker. On back and flanks there are indistinct traces of

vermiculations in light iridescent tints. On young ones there are five transverse bands on the body; these individuals are more gray, or brown, than the large.

Hab. St. Lucia. Thirty-three specimens.

ANOLIS VINCENTII, sp. n.

Head of medium size, about one and three-fourths times as long as wide, longer than the tibia, deeply concave on the forehead and occiput, slightly depressed on the snout; frontal ridges distinct, not extending forward, prominent and rough between the orbits in adults; upper head scales not keeled; scales of the supraorbital semicircles large, more or less in contact between the orbits; nine to fourteen enlarged keeled supraoculars, separated from the supraorbital series by a series of granules; occipital twice as large as the ear-opening, anterior border rounded, in contact with the supraoculars; canthus rostralis not very distinct, of two large and two or three short scales; loreal rows five to six; seven to eight labials to below the centre of the eye; ear opening hardly half as large as the occipital, vertically oval. Gular appendage large, reaching behind the thorax, scales smooth. Body little compressed; a slight dorsonuchal fold. Dorsal scales small, keeled, increasing in size toward the two mesial rows which are largest. Ventral scales smooth, subhexagonal, hardly imbricate, smaller than a few of the antefemorals; the latter moderate, keeled, near the knee tricarinate. Limbs medium, the adpressed leg reaches the ear; digital expansions not large; lamellæ under phalanges ii and iii of the fourth toe about twenty-six. Tail compressed, serrated on the upper edge by large, sub-equal, pointed scales, more than twice (two and one-fourth times) as long as head and body. Postanals not enlarged.

Green to brownish olive; flanks, sacral region, limbs and tail more or less purple or lilac in life; ventral surfaces whitish; gular fold darker, anteriorly, as also in cases, the lower surface of the neck. Head most often darker; upper lip frequently whitish. Very young ones are bronzed, light reddish brown, with faint transverse bands and cloudings; white beneath.

Hab. St. Vincent; eighty-seven specimens.

ANOLIS LINEATOPUS Gray, 1840.

On very young specimens there are four vertical bands of brownish on the flank, sometimes more or less subdivided, and from each a sharp angle is presented to one from the opposite flank, meeting at the vertebral series.

Hab. Kingston, Jamaica. Twenty-five specimens.

ANOLIS SAGRÆ (Coct.) Dum. Bibr., 1837.

From Cuba, 5 ex., S. H. Scudder; 7 ex. Caibarien, Cuba, N. H. Bishop; 60 ex., Matanzas, Havana, and Bahia Honda, Cuba, S. Garman.

ANOLIS ORDINATUS Cope, 1864.

We have this variety of *A. sagræ* from the Bahamas, by C. J. Maynard; New Providence, Bahamas, by F. K. Shaw; the Florida Keys by Count L. F. de Pourtales; and from Nassau, Bahamas, by J. C. Comstock.

ANOLIS PORCATUS Gray, 1840.

This *Anolis* is usually confounded with the *A. principalis* Linné, from the southern part of the United States. The species are in reality quite distinct, though bearing considerable resemblance to each other. Compared with representatives of *A. principalis* from the Carolinas, *A. porcatus* has a longer snout, stronger and sharper cephalic ridges, a longer tail, longer legs, more digital lamellæ and

larger scales on the loreal region and on the flanks. The snout is twice the length of the space between the orbit and the ear; the frontal ridges are very prominent, sharp and comparatively straight, forward from the interorbital space; adpressed, the leg reaches to the middle of the space between the orbit and the ear; the lamellæ under phalanges ii and iii of the fourth toe number about twenty-eight; the tail is more than twice as long as both head and body; and the loreal rows are commonly three, sometimes four.

On *A. principalis* the snout is but about one and two-thirds times the length of the space between the orbit and the ear; the frontal ridges are less sharp and prominent, and spread farther apart or are more crooked in the prefrontal region; the leg reaches the anterior border of the ear; there are about twenty-five lamellæ under phalanges ii and iii of the fourth toe; the tail is about one and three-fourths times as long as head and body; and the loreal rows are five, rarely six or four.

Forty specimens, from Caibarien, by N. H. Bishop, and from Matanzas, Havana, and Bahia Honda, by the writer.

ANOLIS CHLOROCYANUS *Dum. Bibr.*, 1837.

Hab. Samana, San Domingo. Collected by M. A. Frazar.

ANOLIS CÆLESTINUS *Cope*, 1862.

From Hayti by Doctor Weinland; from Tiburon, Hayti, by S. Garman.

ANOLIS PULCHELLUS *Dum. Bibr.*, 1837.

From Port au Prince, Hayti, by Professor Ackermann; from Bayamon, Porto Rico, and from St. Thomas by the writer. Thirty-three specimens.

ANOLIS SEMILINEATUS *Cope*, 1864.

From Samana, San Domingo, M. A. Frazar.

NOROPS OPHIOLEPIS *Cope; Bocourt.*

Cuba, Prof. S. H. Scudder.

POLYCHRUS MARMORATUS *L.; Merr.*

Trinidad. Eleven specimens, C. S. Cazabon and S. Garman.

LIOCEPHALUS VITTATUS *Hallow.; Reinh. & Lütke.*

Cuba, and Matanzas, Cuba, C. J. Maynard and S. Garman.

LIOCEPHALUS MELANOCHLORUS *Cope*, 1862.

Jeremie, Hayti, Doctor Weinland; Tiburon, Hayti, by the writer.

LIOCEPHALUS PERSONATUS *Cope*, 1862.

Jeremie, Hayti, Doctor Weinland; Puerto Plata, San Domingo, M. A. Frazar.

LIOCEPHALUS CARINATUS *Gray*, 1827.

Cuba and New Providence, Bahamas, C. J. Maynard.

LIOCEPHALUS VARIUS *Garman*, 1887, Pr. Am. Phil. Soc.

Grand Cayman Island, W. B. Richardson.

URANISCODON PLICA *L.; Kaup.*

Trinidad.

CYCLURA CARINATA *Harl.*, 1824.

Turks Island, A. S. Bickmore.

There are combs on both third and fourth toes. Scales above the snout small and irregular; teeth serrated.

CYCLURA NUBILA *Gray*, 1831.

Cuba ?. Collector ?.

The plates above the snout are broad and flattened ; the combs appear on both third and fourth toes ; teeth serrated.

CYCLURA CORNUTA, *Daudin* sp.

Metopocerus cornutus Wagl.

Jeremie, Hayti, Dr. D. F. Weinland ; Návassa, Prof. S. F. Baird.

In the memoirs of the Mus. Comp. Zoöl., VIII, 1883 (Rept. and Batr. N. Amer., Introd., p. xiii) the writer called attention to the peculiar specialized corneous digging combs on the third and fourth toes of the hind foot of this lizard. Since that time this apparatus has been found by Professor Cope to mark the species of *Cyclura*, also of burrowing habits, and to afford a most important character in distinguishing them from the species of *Ctenosaura*.

IGUANA TUBERCULATA *Laur.*, 1768.

Trinidad, C. S. Cazabon ; Saba, F. Lagois ; St. Thomas, S. Garman ; Grenada, P. Gellinau.

The Grenada specimens are intermediate between *I. tuberculata* and *I. rhinolopha*. They have one prominent series of tubercles on the neck, and several scattered ones above the hinder extremity of the series. The tubercles on the snout are not so prominent as in *I. rhinolopha* from Central America, but the arrangement is the same. The tubercles on the neck are comparatively few as compared with those on Nicaraguan types.

IGUANA DELICATISSIMA *Laur.*, 1768.

Nevis and St. Barts, F. Lagois.

The eggs of these specimens are elongate, about one and seven-eighths inches by one and one-eighth.

ON WEST INDIAN REPTILES.

SCINCIDÆ.

BY SAMUEL GARMAN.

MABUIA SLOANII Gray, 1845.

Supranasals separated behind the rostral; parietals in contact behind the interparietal; two pairs of broad nuchals; four supraorbitals; four labials in front of the suborbital, sometimes five; scales smooth, in thirty rows around the body; fifty-four to fifty-five from chin to vent in the mesial row.

Jamaica.

MABUIA NITIDA, sp. n.

Supranasals in contact; parietals in contact; two pairs of nuchals; four supraorbitals, sometimes three; four supraciliaries; five labials in front of the suborbital, sometimes four; scales smooth, in thirty rows, sixty to sixty-three from chin to vent. Tail one and one-half times the length of head and body.

Olive, bronzed; a brownish band from nostril to hip is edged with an indistinct band of lighter above and below; a few, angular small spots of brown, with white lateral edges, on back and limbs.

Porto Rico; San Domingo.

MABUIA LUCIÆ, sp. n.

Supranasals in contact; parietals in contact; one to two pairs of nuchals; four supraorbitals; four labials in front

of the suborbital; scales striate, in thirty rows, sixty-six from chin to vent. Tail one and one-half times the length of body and head.

Olive, bronzed; nearly uniform brownish posteriorly; anteriorly with an irregular and broken band of brown from snout to shoulder; arm and neck to flank with dark-edged small spots of white; dark edges on the scales form obliquely transverse streaks on the back; dark lateral edges of the ventrals form longitudinal lines of brown from chin to tail.

St. Lucia.

MABUIA DOMINICANA, sp. n.

Supranasals separate; parietals in contact; nuchals one pair; four supraorbitals; four labials in front of the suborbital, sometimes five; scales rugose, in thirty to thirty-two rows, sixty-eight to seventy-two from chin to vent. Tail about one and two-thirds times as long as head and body.

Brownish-olive, bronzed; a dark band from snout to hip, edged above by a paler one and below by a white line that becomes indistinct backward; white beneath. Forward on young specimens the pale bands are white, and at the inner edge of each, on the back, there is a series of brown spots.

Dominica.

MABUIA MABOUIA, sp. *D. & B.*

Supranasals separate; parietals in contact; nuchals one pair; three supraorbitals; four labials in front of the suborbital, sometimes five; scales with faint striæ, in twenty-eight to thirty rows, sixty-three to sixty-five from chin to vent.

St. Pierre and Ft. de France, Martinique.

MABUIA AENEA Gray, 1845.

Supranasals separate; parietals separate; nuchals one pair; four supraorbitals; five labials in front of the sub-orbital, sometimes four; scales feebly striate, in twenty-eight to thirty rows, fifty-four to fifty-eight from chin to vent.

St. Vincent; Grenada; Trinidad.

MABUIA AGILIS Radd.; Fitz.

Supranasals in contact; parietals in contact; nuchals one pair; four supraorbitals; four labials in front of sub-orbital; scales in thirty rows, striæ faint, fifty-four to fifty-six scales from chin to vent.

Rio Janeiro, Para and Villa Bella, Brazil.

MABUIA AURATA Schn.; Ptrs.

Supranasals usually separated; parietals in contact; nuchals one pair; four supraorbitals; four labials in front of the suborbital; scales smooth, in twenty-eight to thirty rows, fifty-eight to sixty-two from chin to vent.

Rio Janeiro and Goyaz, Brazil, to Turbo, Chagres River and Nicaragua on the Isthmus.

The specimens from which the foregoing notes have been taken are in the Museum of Comparative Zoology at Cambridge, Mass., U. S. A.



BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 19. SALEM: APRIL, MAY, JUNE, 1887. Nos. 4-5-6.

ANNUAL MEETING, MONDAY, MAY 16, 1887.

Held this evening at 7.30 o'clock: The President in the chair. Records of preceding annual meeting read and approved.

This is the first annual meeting of the Institute, when it can be said that a portion of its library and of its collections is deposited in a building of its own and that the remainder is in process of removal. On this occasion it may be appropriate to allude to some incidents in its organization.

In the winter of 1832-3, the bookstore of Mr. John M. Ives (the same now occupied by Jacob Young, 201 Essex street) was frequented by many of the professional men, teachers, and others especially who had a penchant for literary pursuits. Among them were several recent graduates of our colleges engaged in professional studies and some in the various business pursuits.

Mr. Edwin P. Whipple, in his reminiscences of eminent men, speaking of Rufus Choate says, "At the period when he was a young man, practising in the courts of Essex County, he 'pervaded,' if I may use his own term, the Salem bookstores in his leisure hours. He was specially

attracted to the store of Mr. John M. Ives, and he never entered it without falling into conversation with some legal or illegal brother interested in letters, and he never left it without leaving in the memory of those who listened some one of the golden sentences which dropped as naturally from his mouth as pearls from the lips of the fabled fairy. There was a circulating library connected with Mr. Ives' bookstore, and I have a vivid remembrance, when as a boy I was prowling among the books on the shelves suspending my decision as to taking out a novel of Richardson, or Fielding, or Miss Porter or Scott, of listening with a certain guilty delight at the chaffing going on among my elders and betters in the front store. I remember perfectly how I was impressed and fascinated by the appearance of Mr. Choate. He was not a Thaddeus of Warsaw, nor a hero of the type which Mrs. Radcliffe had stamped in my imagination, but there was something strange, something 'oriental' in him, which suggested the Arabian Nights. In after years, I wondered, as I wondered then, that such a remarkable creature should have dropped down, as it were, into Essex County. There seemed to be no connection between the man and his environment. He flashed his meaning in pointed phrase while his interlocutors were arranging parts and preparing arguments, and darted out of the store with a ringing laugh." — E. P. Whipple's *Recollections of Eminent Men*, page 2.

Mr. Benjamin H. Ives, a younger brother of the proprietor and associated with him in his business, was a student of nature especially in botany and entomology. At his suggestion the subject of organizing a natural history society was frequently discussed and a paper received some fifteen or twenty signatures for membership. Mr. Ives had also called the attention of the public to this movement by occasional articles in the newspapers. These

crude ideas did not crystallize into any permanent form until the December following, when on Saturday the 14th of that month a meeting was held and a committee chosen to prepare by-laws and report at a future meeting. At the adjourned meeting the by-laws were accepted and the following officers were elected :—

President, Andrew Nichols ; 1st Vice President, William Oakes ; 2nd Vice President, Gardner B. Perry ; Sec'y and Treas., John M. Ives ; Librarian and Cabinet Keeper, John L. Russell ; Curators, William Oakes, John Clarke Lee, Charles Grafton Page, Thomas Spencer.

In response to a circular, a gathering of the friends from various parts of the county attended a meeting at Topsfield on the sixteenth day of April, 1834. The meeting was held at the old Stage House and the organization completed, as Mr. Samuel P. Fowler stated, over a clump of Blood Root (*Sanguinaria canadensis*) in full flower, which some one had found during the forenoon ramble and placed upon the table.

Soon after this meeting, rooms were engaged over the Essex Fire and Marine Insurance company on Essex facing Central street, the same that had been used for the books of the Salem Athenæum some ten or fifteen years previously. At the same time, Vice President William Oakes of Ipswich, an original subscriber to Audubon's "Birds of America," loaned to the society some of them to be placed on exhibition. These plates, having been distributed to the subscribers only a short time before, excited a considerable interest ; a good introduction to the society's work. At the close of these reminiscences

The Report of the Secretary was read, accepted and ordered to be placed on file.

The Report of the Treasurer, approved by the auditor, was read and accepted and ordered to be placed on file.

The Report of the Librarian was read and accepted and ordered to be placed on file.

The Report of the Auditor was read and accepted and ordered to be placed on file.

The secretary read the following letter from Mr. Ross Turner donating an oil painting executed by himself.

TO THE PRESIDENT AND MEMBERS OF THE ESSEX INSTITUTE:—

Some years ago while visiting the Navy Yard at Charlestown, Mass., I saw the hulk of the old Niagara, moored out in the stream in the last stages of dilapidation and ruin. The sight of this noble ship impressed me so much that I began a picture of that subject; although I do not wish to convey the idea that I intended to make a literal portrait of the old Niagara, but to paint an old, worn-out vessel anchored to her last moorings, lighted by the glowing light of sunset. This picture I entitled "The Last Haven," and with your permission I wish to offer it as a gift to the Art Department of the Essex Institute, as a sort of memorial of the ship that assisted in laying the first Atlantic cable.

With much respect I am yours,

ROSS TURNER.

March 31, 1887.

126 Bridge Street, Salem, Mass.

The following letter was also read :

Salem, May 16, 1887.

TO CAPT. G. M. WHIPPLE,
SEC'Y ESSEX INSTITUTE.

DEAR SIR:

I have been commissioned by a much admired artist, long time resident at New York, but a native of Salem, Miss Fidelia Bridges, to tender in her name, to the Essex Institute, the charming picture of "Pastures by the Sea" painted by her and now for the first time shown to the public; and to beg its acceptance as a token of her continued regard for her native city and as an earnest of her interest in the new career upon which the Institute is entering.

The picture measures fifteen by twenty-nine inches. It shows the correctness of manner and delicacy of touch which characterize the work of this artist. Its merits speak for themselves, and entitle it to a conspicuous place among the works of art which will adorn the future home of the Institute.

I am, respectfully yours,

ROBERT S. RANTOUL.

The meeting voted unanimously to accept the two pictures and on motion of vice-president Hagar, the President was requested to appoint a committee of three persons to prepare appropriate letters of thanks to Mr. Turner and Miss Bridges. The President named Messrs. Hagar, Rantoul and Upham.

The committee on nomination of officers for the ensuing year presented the following list which on a ballot being taken was duly elected :

OFFICERS OF THE ESSEX INSTITUTE

MAY 1887 TO MAY 1888.

PRESIDENT:

HENRY WHEATLAND.

VICE-PRESIDENTS:

ABNER C. GOODELL, JR.

DANIEL B. HAGAR.

FREDERICK W. PUTNAM.

ROBERT S. RANTOUL.

SECRETARY:

GEORGE M. WHIPPLE.

TREASURER:

GEORGE D. PHIPPEN.

AUDITOR:

RICHARD C. MANNING.

LIBRARIAN:

WILLIAM P. UPHAM.

CURATORS:

History—HENRY F. WATERS.

Botany—GEORGE D. PHIPPEN.

Manuscripts—WILLIAM P. UPHAM.

Zoölogy—EDWARD S. MORSE.

Archæology—FREDERICK W. PUTNAM.

Horticulture—

Numismatics—MATTHEW A. STICKNEY.

Painting & Sculpture—T. F. HUNT.

Geology—

Technology—EDWIN C. BOLLES.

Music—JOSHUA PHIPPEN, JR.

COMMITTEES:

Finance:

The PRESIDENT, *Chairman ex off.*

WILLIAM MACK.

GEO. R. EMMERTON.

DAVID PINGREE.

HENRY W. PEABODY.

The TREASURER, *ex off.*

Library:

E. B. WILLSON.

HENRY F. KING.

WILLIAM D. NORTHEND.

THEODORE M. OSBORNE.

The LIBRARIAN, *ex off.*

Publication :

E. S. ATWOOD.

JAMES A. EMMERTON.

EDWIN C. BOLLES.

J. S. KINGSLEY.

T. F. HUNT.

Lecture :

ROBERT S. RANTOUL.

FREDERICK W. PUTNAM.

A. L. GOODRICH.

FIELDER ISRAEL.

WM. NEILSON.

*Field Meeting :**The SECRETARY, Chairman ex off.*

GEORGE COGSWELL, Bradford.

FRANCIS H. APPLETON, Peabody.

GEORGE A. PERKINS, Salem.

N. A. HORTON, Salem.

E. N. WALTON, Salem.

FRANK R. KIMBALL, Salem.

CLARENCE MURPHY, Salem.

W. S. NEVINS, Salem.

GEO. A. BATES, Salem.

JOHN H. SEARS, Salem.

Mr. Rantoul, in behalf of a committee of the directors, submitted the following changes in the by-laws for adoption at this meeting, the same having been read and approved at a regular meeting held on Monday, May 2 :

FIRST. It is recommended that article one of the present by-laws be stricken out and that the following words be substituted :

ARTICLE I. MEMBERSHIP.

Section 1. Any person may be elected a member, at a regular meeting, by a majority vote of the members present and voting, the name of such person having been proposed in writing by two members at a previous meeting.

Section 2. Any person not residing in the county of Essex, who may be interested in the objects of the Institute, or desirous of promoting its work, may be elected a corresponding member at a regular meeting, by a majority vote of the members present and voting, upon the nomination of the board of directors ; but corresponding members shall not be eligible to office nor entitled to vote nor liable to assessment.

Section 3. Persons who have attained an eminent dis-

tion in science, literature or the arts, may be elected honorary members at the annual meeting by a majority vote of the members present and voting, upon nomination by the Board of Directors.

SECOND. It is recommended that Section 40 in Article VII be amended by striking out in the sixth line thereof the word "thirty" and substituting therefor the word "fifty" and further by striking out the words following the word "Institute" in the seventh, eighth and ninth lines thereof.

THIRD. In view of the generous contributions of funds with which the Treasury of the Institute has been favored; in view of the new and enlarged facilities we are about to enjoy in a building of our own every way adapted for library purposes; in view of the very considerable accession of valuable books which the year has brought us; in view of the fact that an increased membership, with an additional income from assessments, would enable the Institute to open its rooms during more hours in the week and in every way render its growing advantages more available to the public; it is recommended that a committee be chosen at this meeting which shall thoroughly examine and revise the by-laws and consider the new conditions of life upon which the Institute is entering, and report at a future meeting what changes in the organization and administration of the Institute, if any, can be made, which may be expected to result in an increase of membership and a larger return from the new facilities for which we are indebted to the liberality of the public.

Voted, That the alterations of the by-laws, recommended by the committee, be adopted, and that Messrs. Rantoul, Hunt, Willson, Upham and Wheatland be made a committee to further revise the by-laws and propose any changes which may to them seem desirable and to report the same at a future meeting.

At a meeting, Jan. 21, 1887, a committee had been appointed consisting of the President and Messrs. R. S. Rantoul and T. F. Hunt to confer with a like committee of the Trustees of the Salem Athenæum, and to consider an arrangement by which the Institute might occupy a portion of Plummer Hall, after the then existing agreement should terminate, and to report at a future meeting. The report of the above committee was presented, adopted, and placed on file.

THE RETROSPECT OF THE YEAR

compiled from the several reports read at the meeting, and the remarks of several members in relation thereto, presents the work of the Institute in its various departments since the last annual meeting.

Changes occur in the list of our associates, in the addition of new names and the withdrawal of some by resignation, removal from the county or vicinity, or by death. We have received information of the death of the following members.

EMERY KING BENSON of the firm of Benson Brothers of Boston, died very suddenly of heart disease, at his summer residence in Beverly, on Sunday, August 8, 1886. He was born in Salem, July 13, 1839, son of Capt. Samuel and Sarah M. (Prentice) Benson. He leaves a widow and children. He was a gentleman of fine culture, marked business ability and high social standing, an alderman of Salem in 1882, a member of the Water Board 1883-4. Admitted to membership Dec. 20, 1875.

NICHOLAS ARTHUR CLARKE died at his residence, on Linden Street, Salem, Friday, Dec. 10, 1886; son of George and Martha (Thompson) Clarke; born at Sanbornton

Bridge, now Tilton, N. H., Sept. 11, 1813, educated at Phillips Academy, Exeter, and Harvard College, graduating from the latter in 1838. His father removed afterwards to Stratham where he lived some years, by occupation a farmer. After being, for a number of years, a tutor in various institutions of learning both public and private, in this section and the south, he was obliged by ill health to seek a less confining profession. He was at different times connected with the Bowditch, Hamilton and Holyoke Insurance companies of Salem, and was afterwards actively engaged as an insurance adjuster throughout New England, ranking as senior in age and experience in the field. Admitted to membership Feb. 13, 1867.

GEORGE DODGE GLOVER, a member of the board of aldermen, died at Salem, on Monday, June 7, 1886. He was a son of Cook O. and Deborah M. (Foss) Glover and was born in Salem, April 30, 1823, and was educated in our public schools. He was early apprenticed to the shoe business, and many years ago, in connection with the late Abraham F. Bosson, who died Feb. 21, 1873, established the well known firm of Bosson and Glover, which has continued to this day, Harvey Bosson succeeding the father in the business. Both of the original partners were adepts in floriculture, and for years took a prominent part in the horticultural exhibitions of the Essex Institute of which they were both members, contributing fine specimens of dahlias and other choice varieties of flowers. Mr. Glover has taken great interest in the city affairs, having been for eight consecutive years a member of the Council; also on the Board of Aldermen and a member of the Board of Overseers of the Poor and a Representative in the State legislature. Admitted to membership, Feb. 25, 1858.

DR. PRESTON MARSHALL CHASE died at his residence

in Danvers, January 4, 1887. He was born in Bradford, Mass., May 12, 1827, attended the public schools of Bradford and Andover, and taught school for some time in his early manhood in several towns of New Hampshire. Subsequently he studied medicine with Dr. Fowler of Bristol, N. H., and supplemented his study by a course at the Harvard Medical School from which he graduated in 1857. He came at once to Danvers to begin practice, and for nearly thirty years he discharged all the duties of his profession and was active in the public affairs of the town of his adoption. He was a typical country physician, of fine face and figure, cheerful, jovial, known to and knowing everybody, and mixing as much inspiring courage as medicine in his sick-room prescriptions. He served a number of years on the school committee. He was appointed by Gov. Andrew to be examining surgeon for recruits in 1861. In 1870 he was appointed assistant surgeon of eighth Reg. M. V. M., and was promoted surgeon in 1875, which position he held for many years. He was a member of Jordan Lodge of Masons in South Danvers (Peabody) and was one of the charter members of Unity Lodge of Danvers and also of the Holten Royal Arch Chapter of Danvers. He married, Sept. 12, 1858, Laurinda Bailey of West Newbury; she and three sons survive him. Admitted to membership, Aug. 2, 1867.

Prof. GEORGE BAKER JEWETT died at his residence in Barton Square, Salem, June 9, 1886. He was a son of Rev. Paul Jewett (a native of Rowley) and Eleanor M., daughter of John Punchard of Salem; was born in Lebanon, Me., during his father's pastorate there, Sept. 11, 1818, and passed much of his boyhood under the supervision of his grandfather Punchard in Salem; graduated at Amherst College in 1840, and at the Andover Theo-

logical Seminary in 1843; a tutor in Amherst 1843-4; a teacher 1845-9; Professor in Amherst, 1850-5; and pastor of the First Church in Nashua, N. H., 1855-6. Since then he has generally resided in Salem, indulging his scholarly tastes, and preaching and supplying pulpits when and where his services were required. For the last two or three years of his life, he devoted his time to verifying with extremest care the classical and biblical references in a forthcoming New Testament Lexicon. Among his other literary labors were a pamphlet controversy on the revised New Testament issued by the American Bible Union and the editing of the 4th and 5th volumes of Punchard's History of Congregationalism (posthumous).

He married Mary J. daughter of Henry and Harriet (King) Whipple. She died at Salem, Aug. 30, 1887, aged 67. Admitted to membership July 6, 1864.

EMERY SAUNDERS JOHNSON born in Salem, 17 May, 1817, son of Emery and Sarah (Saunders) Johnson; died at his residence on Essex street, Salem, Dec. 13, 1886. He was brought up in David Pingree's counting room, and from there he went to sea becoming master while yet very young. In later life he was an extensive traveller visiting the other continents. He leaves a widow and one son Walter E. Johnson, a lawyer in Denver, Col. He married Ann E. daughter of Benjamin and Ann M. (Brace) Creamer. Admitted to membership March 8, 1854.

RICHARD LINDSEY died at his residence on Everett street, Salem, Nov. 22, 1886; son of Richard and Lois (Devereaux) Lindsey of Marblehead; he was born in that town, Feb. 22, 1809: married, in 1837, Sophronia, daughter of Ezra and Polly (Lakeman) Fiske, born in Salem, May 24, 1808. For many years he kept a trading store of West India goods and groceries on Lafayette street, Salem. Admitted to membership July 22, 1857.

HENRY OSBORNE died at the Salem Hospital, August 14, 1886. He was son of Henry and Mary (Ward) Osborne, born in Salem on the second of January, 1809.

In early life he was a hatter and for many years was associated with his brother, the late Stephen Osborne, and continued the business for several years after his brother's death. Their store on the corner of Essex and Central streets was one of the oldest in the city. He was a man of quiet habits and of sterling integrity. His wife was Louisa Shreve born Jan'y 14, 1817, daughter of Isaac and Hannah (Very) Shreve; one son Rev. Louis S. Osborne, graduate Harvard, 1873, Rector of Trinity Church, Chicago, Ill., survives. Admitted to membership March 29, 1854.

AUGUSTINE STANIFORD PERKINS died at Salem, on Monday morning, Dec. 13, 1886, son of Aaron and Sarah (Staniford) Perkins, born at Ipswich May 13, 1813. He was for many years an energetic and active shipmaster in the Zanzibar trade, and was one of the original "forty-niners" in command of the barque Eliza which sailed from Salem in December, 1848, and was one of the first vessels that went to California at the time of the gold discovery. Admitted to membership Feb. 22, 1854.

GEORGE C. PEIRCE, of Peabody, died after a long illness, on Thursday, Nov. 11, 1886. He was born in Medford, May 2, 1814, son of Jonathan and Lydia (Osborne) Peirce. In early life he entered the employ of the late Caleb Peirce as a dyer, afterwards a manufacturer, and about 1850 introduced a new industry, the making of Russia caps and lambs' wool cork soles. He was public spirited and interested in the affairs of the town; chief engineer of the fire department in 1868 and was one of the committee on the introduction of water; for several years captain of the Danvers Light Infantry. He leaves

a widow, a son, George O. Peirce, and a daughter. Admitted to membership, Aug. 20, 1877.

ELIZABETH APPLETON PUTNAM died at her residence in Salem, April 27, 1887, daughter of Nathaniel and Elizabeth (Ward) Appleton; born at Salem, July 10, 1804; married Eben Putnam, a graduate of Harvard in the class of 1815; postmaster of Salem 1829-40; died April 3, 1876 (see Bulletin Essex Inst., Vol. VIII, p. 45). Her facility for graceful versification was remarkable. Admitted to membership August 9, 1865.

XENOPHON H. SHAW, the oldest of Salem's business men, died suddenly at his home on Tuesday, Dec. 7, 1886. He was son of Darius and Johannah (Winship) Shaw, and was born in Lexington, Jan. 10, 1799. He married Eliza C., daughter of Elijah and Lucy (Collins) Haskell. He had for sixty-six years carried on the gilding and picture frame business at 283 Essex street both before and since the building of Mechanic Hall. His character was one of the sturdiest and most manly, upright and honest, and his sterling and kindly qualities endeared him to every one with whom he came in contact. Admitted to membership July 6, 1864.

HENRY FRANCIS SKERRY died at his home on Hazel street, Salem, Nov. 1, 1886, son of Francis and Phebe W. (Bancroft) Skerry, and was born July 25, 1821; a member of the English High School, after leaving which he engaged in the business of his father, on Essex street. In 1842 he united himself with the Central Baptist Church. In the following autumn removed to Bangor, Me., where he remained eleven years; coming again to his native city, he identified himself with the same Church and was secretary or superintendent of the Sunday School, or a deacon serving until the Calvary Church was formed,

when he became one of its constituent members and served it in the capacity of Deacon until he died. Admitted to membership Oct. 7, 1857.

CHARLES FRANCIS ADAMS died on Sunday morning, Nov. 22, 1886, at his home on Mt. Vernon street, Boston. He was the son of John Quincy and Louisa Catherine (Johnson) Adams and was born in Boston, August 18, 1807. Graduated at Harvard College, 1825. The next two years were passed in Washington as the confidential secretary of his father. After preliminary studies with Daniel Webster, he was admitted to the Suffolk Bar in 1828; in 1829, 3d Sept., married Abigail Brown, youngest daughter of Hon. Peter C. Brooks. During the period before the war he wrote several articles for the *North American Review*; was member of both Houses of Massachusetts legislature, and a member of the 36th Congress. One of the first appointments of President Lincoln was that of Mr. Adams as minister to England. Early in 1868 Mr. Adams, after seven years of absence, asked to be released from longer service. On his return home he became again a resident of Boston and Quincy devoting himself to those literary pursuits in which he always found great pleasure. The record of his election to corresponding membership, bears date, Wednesday, Aug. 11, 1852.

NATHANIEL ELLIS ATWOOD, son of John Atwood of Provincetown, Mass., was born in that town, Sept. 13, 1807. In 1816, the family removed to Long Point, the very tip of Cape Cod, to enable them the better to pursue their calling, and here their son Nathaniel, at the age of nine, began his service in the open fishing boat. In early manhood he had risen to the command of a vessel engaged in the fisheries on the banks of Newfoundland. Fishing

was his favorite employment and he continued in it until near his sixtieth year. He then engaged in the manufacture of cod liver oil, which he successfully pursued during the remainder of his life. In early life he began to observe the habits and characteristics of fishes, and to read such books on natural history as he could obtain. Keen observation and a powerful memory enabled him to accumulate a great quantity of novel information, all of which was placed at the service of Dr. D. H. Storer during the preparation of his report on the fishes of Massachusetts published in 1843. His special knowledge on these and kindred subjects naturally attracted the attention of Prof. Louis Agassiz, who, in 1852, visited him at his home on Long Point; this was the beginning of a lifelong friendship.

His growing acquaintance with scientific men, who appreciated his peculiar attainments, was an inducement to redouble his efforts in his favorite studies and pursuits.

Under a resolve of the Legislature approved May 16, 1856, the Governor was authorized with the advice of the Council to appoint three commissioners, whose duty it should be to ascertain and report to the next General Court such facts respecting the artificial propagation of fish as might show the practicability and expediency of establishing the artificial propagation of fish and the restocking of the interior waters of the State.

Capt. Atwood was appointed one of these commissioners, and to him was intrusted the duty of making the observations and conducting the preliminary experiments. Temporary arrangements for this purpose were made at Sandwich, and here he made the first experiments of the kind in this State, and proved that the artificial fecundation of the eggs of trout could be accomplished, although he did not in these first attempts succeed in keeping the

embryos alive until they had reached their full development, owing to the attacks of a fungus, but he showed the methods to be followed which would lead to success.

The report of the commission was the first document of the kind published in this country, and the opinion is there expressed that the artificial propagation of fish is not only practicable but may be made very profitable, and that our fresh waters may thus be made to produce a vast amount of excellent food; that a small outlay of capital and a moderate degree of skill will enable the proprietors of our smaller streams and ponds to stock them with valuable fish; that in respect to the larger rivers and ponds a combination of individuals may be necessary, with special legislation adapted to each particular case. From this report made by Capt. Atwood and his two associates has resulted the Board of Commissioners on Inland Fisheries, whose labors for the past twenty-three years have proved the conclusions arrived at by this preliminary work, and ponds, streams and rivers have been stocked with fishes of several kinds, both native and foreign, by means of artificial propagation.

Capt. Atwood served in both branches of the Massachusetts Legislature: in the House, 1857, 1858, and in the Senate, 1869, 1870, 1871, where his knowledge of the sea-fisheries and an interest in the restocking of our rivers with fish were of great importance to the Commonwealth. During these several sessions he delivered important speeches on the sea-fisheries. He lectured on these subjects in many of the lecture courses in eastern Massachusetts, and in 1869 he gave a course of twelve lectures on fishes before the Lowell Institute, which were so well received that an invitation was extended to him for a second course on the same subject during the following season.

Indeed, he lived to see the subject of ocean and inland

fisheries, about which little was known in his youth, submitted to scientific investigation by national and state commissions, to which he was a valuable contributor.

Capt. Atwood was a member of the Boston Society of Natural History, of the Society of Arts of the Massachusetts Institute of Technology and of the American Academy of Arts and Sciences. He was elected a corresponding member of the Essex Institute, Aug. 27, 1856.

He died at his home in Provincetown on Sunday, November 7, 1886, after a lingering illness.

ISAAC LEA, LL.D., the distinguished naturalist, who earned a world-wide fame by his extensive researches in science, died on Wednesday, Dec. 8, 1886, at his residence in Philadelphia, in the ninety-fifth year of his age. His principal works are devoted to conchology and some departments of palæontology.

His investigations of the American Unios began in 1825 on receiving some specimens from the Ohio river; and when they terminated in 1874, he had published thirteen volumes.

He was born in Wilmington, Delaware, March 4, 1792. He became a member of the American Philosophical Society in 1828; was president of the Academy of Natural Sciences of Philadelphia from 1853-1858, and at the time of his death he was an honorary member of many of the scientific, philosophical and historical societies of the world. He received the degree of LL.D., from Harvard in 1852. In 1860 he presided at the meeting of the American Association for the Advancement of Science, held at Newport, R. I. A complete detailed list of his publications with a biographical sketch is contained in number twenty-three of the Bulletin of the United States National

Museum. Elected a corresponding member, March 5, 1866.

REV. CHARLES CHAUNCY SEWALL was born at Marblehead, May 10, 1802; the youngest son of chief justice Samuel and Abigail (Devereux) Sewall. In early life he lived in New York city with an elder brother and entered his store as a clerk. He then went to Phillips Academy, Exeter, where he was fitted for Bowdoin College, which he entered in 1822. On leaving college, he turned his thoughts to the pulpit; and, in the family of Rev. John White of West Dedham, he found a quiet but congenial home for his studies which he pursued with marked diligence and attention. He was installed April 11, 1827, the first pastor of the Unitarian church of Peabody, and resigned in the summer of 1841. He removed to Medfield where he was occupied in farming and in successively supplying the pulpits of East Lexington, Lincoln, Wayland and Sharon. He was a faithful attendant at the local conferences and the gatherings of ministers. His name has also been associated with the affairs of the town, in many important trusts; as selectman, town clerk, town treasurer, member of the school board, representative to the Massachusetts legislature, etc. He was an early abolitionist, in sympathy with Whittier and Garrison. In his pastoral relations he responded readily to all calls for his services. He was a voluminous correspondent, and wrote poems, articles for the newspapers, essays, reports, sermons, etc. He died at his residence in Medfield, Nov. 22, 1886. He married Amy, daughter of William Peters, Esq., of Medfield, Oct. 1, 1823. She died Aug. 15, 1872. He was an original member of the Essex Institute, having been, at its inception in 1848, an honorary member of the Essex Historical Society.

MEETINGS. Regular meetings were held on the first and third Monday evenings of each month. The following communications and lectures may be specified :

Rev. S. L. Gracey, "The New England Thanksgiving."

J. W. Fewkes, of Cambridge, "A Naturalist's Visit to Grand Menan."

F. W. Putnam, of Cambridge, "General burial places of the Mound builders, particularly the makers of those known as the Turner Group of the Little Miami Valley, Ohio."

William D. Northend, "The Settlement of the Massachusetts Bay Colony."

John T. Moulton, of Lynn, "Inscriptions from the old Burying-ground, Lynn."¹

Andrew McFarland Davis, of Cambridge, "Indian Games;" "A few additional notes concerning Indian games."²

George M. Whipple, "A Sketch of the Musical Societies of Salem."³

William P. Upham, "Account of the Rebecca Nurse Monument."⁴

Richard H. Derby, of New York, "Roger Derby."⁵

Robert S. Rantoul, "A Contribution to the History of the Ancient Family of Woodbury."⁶

Wellington Pool, of Wenham, "Inscriptions from the old Burying-ground, Wenham."⁷

J. H. Sears, "Dermatochelys Coriacea, Trunk Back or Leathery Turtle;" "List of native and introduced plants observed in flower in the vicinity of Salem, during the spring of 1886, on or before May 1."⁸

¹ See Hist. Coll., vols. XXII, XXIII. ² See Bull., vol. XVII, p. 89 and vol. XVIII, p. 168.

³ See Hist. Coll., vol. XXIII, p. 72. ⁴ See Hist. Coll., vol. XXIII, p. 151.

⁵ See Hist. Coll., vol. XXIII, p. 229. ⁶ See Hist. Coll., vol. XXIV, p. 1.

⁷ See Hist. Coll., vol. XXIV, p. 72. ⁸ See Bulletin, vol. XVIII, pp. 87, 95.

J. S. Kingsley, "The Development of Crangon Vulgaris,"—second paper.⁹

F. W. Putnam, "Conventionalism in ancient American Art."¹⁰

Samuel Garman, "On the West Indian Teiidæ in the Museum of Comparative Zoölogy;" "West Indian Batrachia in the Museum of Comparative Zoölogy;" "On West Indian Geckonidæ and Anguidæ;" "On West Indian Reptiles—Iguanidæ, Scincidæ."¹¹

Geo. B. Blodgett, "Early Settlers of Rowley, Mass." (concluded).¹²

James A. Emmerton, "Salem Baptisms" (concluded).¹³

FIELD MEETINGS. — Two have been held during the season: *First*, on Thursday, July 1, 1886. A very pleasant excursion to the North part of the county, among the towns in the valley of the Merrimac. A party left Salem by rail for Newburyport, thence by carriage to the place of rendezvous, West Newbury, one of the most attractive of our farming towns, passing on the way Moulton's Hill and Curson's Mills, and the well-known Laurel Grounds owned by Mr. E. S. Moseley of Newburyport, from whom a kind invitation to visit the same was extended. Arriving at the place of meeting about noon, we there met many friends who had joined the party on the way, or had come in various modes of conveyance from the adjoining towns, and the members of the West Newbury Natural History Club, our hosts on this occasion; a couple of hours were spent in partaking of a most excellent lunch and in social conversation. The afternoon session

⁹ See Bulletin, vol. XVIII, p. 99.

¹⁰ See Bulletin, vol. XVIII, p. 155.

¹¹ See Bulletin, vol. XIX, pp. 1, 13, 17, 25, 51. ¹² See Hist. Coll., vol. XXIII, pp. 231,

¹³ See Hist. Coll., vol. XXIII, pp. 81, 161, 241. 304; vol. XXIV, p. 43.

was called to order in the Town Hall at 2 P. M. by the President who made a few introductory remarks and then called upon Mr. Haydn Brown of West Newbury, who gave a familiar talk on "Our Song Birds," a subject to which he had devoted much observation and study. He said that there were three hundred and thirty-two varieties of birds recorded in Massachusetts. About eighty of these varieties are our summer residents, raising their young in this neighborhood. The handsomest birds in plumage are not the best songsters. The Bartram Sandpiper or Field Plover was fully described as to its habits, singing, etc. Robins, he said, are fast increasing and they build near dwellings. Their best singing is in the morning just before daybreak.

The warblers, field sparrows, orioles, swallows and other varieties were alluded to, and their peculiar characteristics were noted. A collection of well prepared specimens of birds was shown as the different varieties were described. Mr. M. Walsh Bartlett apologized for the absence of Mr. T. C. Thurlow, president of the club, who was kept at home by illness. Mr. Bartlett welcomed the Institute to West Newbury, and mentioned that the geology of the place is interesting, and hoped that at some future time the Institute would make a thorough geological examination of this vicinity. Mr. John H. Sears described the flora of the place, showing the specimens that he had collected, and giving some simple and practical hints to students in botany.

It was *voted* that the very cordial thanks of the Institute be extended to the members of the West Newbury Natural History Club, for the refreshing and bountiful lunch so handsomely served, and to the ladies who had kindly assisted in making this gathering so successful; also to

the town authorities for the use of the hall for the purposes of the meeting. At the close of the meeting the party were conveyed in horse cars to Haverhill, thence by steam cars to Salem, by way of Sutton's Mills, Middleton and Danvers, arriving about 7 p. m.

Second, at Plum Island on Wednesday, Aug. 11, 1886. A goodly company left the Boston and Maine station, Salem, about eight in the morning. On arriving at Ipswich, they repaired to the wharf, where the little steamer *Carlotta* was in readiness to convey them to the Island.

The sail down Ipswich River is very pleasant: the river is very crooked, its sharp windings giving diversity to the trip and adding much to its attractiveness. There are several landings along the river and on the Island, where there are clusters of houses which are let for summer camping purposes. One steamboat runs regularly to Ipswich, and another to Rowley, while excursion boats from Newburyport are frequent visitors.

The afternoon meeting was held in a barn, which was extemporized for a lecture room.

The President, in opening the proceedings, referred to the different kinds of meetings the society has held. During the sail down the river he was reminded of the great interest that was felt, several years ago, in the shellheaps at Eagle Island, and other places contiguous, when the locality was visited by distinguished scientists. He also alluded to the foundation of the Museum of American Archæology and Ethnology at Cambridge by the liberality of George Peabody, and to the instrumentality of Prof. Jeffries Wyman (who was appointed the first curator of the Museum) in giving an impetus to archæological research, which has made rapid progress since his time. Since Prof. Wyman's death, the museum has been under

the direction of Prof. F. W. Putnam, his immediate successor in office, and it has become one of the best known and most useful institutions of its character in the country.

Mr. J. S. Kingsley (who is now conducting microscopic examinations and zoölogical investigations at Salem Neck) gave a familiar talk upon the eye. He first described the human eye and explained, with the aid of blackboard drawings, how the eye receives the object on the retina, and how the optic nerve connects the retina with the brain. The different parts of the picture are produced on different sections of the retina, each section taking its own, and the brain somehow putting these parts together to form the perfect picture. In the classes of animals other than the vertebrates, eyes are not always placed in the head, nor are they always two in number. He explained this in the case of starfishes, worms, and in certain mollusks, which have a large number of eyes.

Mr. John H. Sears of Salem was called upon to speak of the seashore plants, many of which he exhibited and described. He also said that many of the plants found here were not peculiar to the seashore, for they could be found about us on the mainland. Among the woods which he considered indigenous to Plum Island were the pitch pine, white and red oaks, maple, juniper, and some others; and also certain shrubs, many of which are to be found on the mainland. He also spoke of two forms of grape vine to be found here, and exhibited the plum bush, with some of the fruit upon it, this being the fruit from which the Island takes its name.

Prof. A. C. Perkins of Brooklyn, N. Y., and formerly principal of Phillips Academy, Exeter; Messrs. Alfred Osgood of Newburyport, N. A. Horton of Salem, C. A. Sayward of Ipswich, and others offered remarks.

Voted. That the thanks of the Institute are hereby tendered to Mr. Wm. C. Cullen, the landlord of the hotel, and to Mr. N. F. Hopkins of Salem, for kind attentions and civilities. Adjourned.

LIBRARY.—The additions to the Library for the year (May, 1886 to May, 1887) have been as follows:

By Donation.

Folios,	298
Quartos,	485
Octavos,	2,760
Duodecimos,	1,618
XVI mos,	650
XXIV tos,	183
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Total of bound volumes,	5,994
Pamphlets and serials,	11,610
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Total of donations,	17,604

By Exchange.

Quartos,	13
Octavos,	173
Duodecimos,	26
XVI mos,	1
XXIV tos,	1
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Total of bound volumes,	214
Pamphlets and serials,	2,897
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Total of exchanges,	3,111

By Purchase.

Octavos,	8
Duodecimos,	10
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Total of bound volumes,	18
Pamphlets and serials,	6
<hr/>	
Total of purchases,	24
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Total of donations,	17,604
Total of exchanges,	3,111
Total of purchases,	24
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Total of additions,	20,739

Of the total number of pamphlets and serials, 2,731 were pamphlets, and 11,782 were serials.

The donations to the Library for the year have been received from one hundred and fifty-nine individuals and seventy-two societies and governmental departments. The exchanges from eight individuals and from one hundred and sixty-six societies and incorporate institutions of which ninety-two are foreign ; also from editors and publishers.

It must be very gratifying to all the friends of the Essex Institute to reflect that while every year since its organization has witnessed a constant increase in its prosperity and usefulness, the past year has added to its material resources more abundantly than ever. The purchase of the Daland estate gives us a most commodious and convenient building for the reception of that part of our library which is most used for reference and circulation, as well as fire-proof rooms for the most valuable portion of our collections. In connection with the facilities afforded us by the lower rooms of Plummer Hall, it is hoped that sufficient room will be found for the present to arrange properly the whole library, now consisting of 50,000 bound volumes, besides our great collection of pamphlets and newspapers. In 1855 the number of bound volumes was stated to be 10,000.¹ From that time to 1872 the total of bound volumes added to the library was 16,118 or an average of 895 per year. From 1873 to 1886 the total was 17,656, averaging 1,261 each year. Adding to these the donations of the past year gives the present total of bound volumes just 50,000.

With such rapid growth the time will soon come when still larger accommodations will be required.

Among the donations to the library (which much exceed

¹ See second "Act of Incorporation" Dec., 1855.

those of any previous year) the following may be mentioned as especially important.

The library of the late Augustus Story bequeathed by his sister, Miss Eliza Ann Story, was received in October, 1885, but was not recorded till the present year. It consists of 1,318 bound volumes and 3,028 pamphlets and serials, and is especially rich in literary and standard works, including many rare and finely illustrated volumes. This collection will be kept by itself in accordance with the request of Miss Story.

The library of the late Francis Peabody, presented by his widow Mrs. Martha Peabody, contains 3,055 bound volumes and 1,103 pamphlets and serials. This most generous donation is especially valuable for the great number of works relating to science and the mechanical arts, agriculture, horticulture, photography, etc.

Mr. T. F. Hunt, our curator of painting and sculpture, has presented to the library his unique collection of works relating to China, over 600 volumes. Probably no more extensive or valuable collection of books on this subject can be found in this country. We are also indebted to Mr. Hunt for a large increase of the Art Library founded and maintained by him.

Donations or exchanges have been received from the following :—

	Vols.	Pam.
Adelaide, Royal Society of South Australia,	1	
Almy, James F.,	2	
Altenburg, Naturforschende Gesellschaft des Osterlandes,		1
American Association for the Advancement of Science,	2	
American Ornithologists' Union,		4
Ames, George L.,		1
Ames, John G., Washington, D. C.,		1
Amherst College,		2
Amiens, Société Linnéenne du Nord de la France,	1	37
Anagnos, M., South Boston,		1
Andover, N. H., Proctor Academy,		1

	Vols.	Pam.
Andover Theological Seminary Library,		1
Baker, Walter, & Co., Dorchester,	1	
Balch, G. B., Yonkers, N. Y.,		1
Baldwin, William H., Boston,	1	
Baltimore, Maryland Historical Society,	1	1
Baltimore, Md., Johns Hopkins University,		25
Baltimore, Md., Peabody Institute,		1
Barton, E. M., Worcester,		3
Barton, William G.,	5	157
Batavia, K. Naturkundige Vereeniging in Nederlandsch Indië,	1	2
Batchelder, H. M., Maps, Charts,	9	77
Battell, Robbins, } Battell, Miss Anna, } Norfolk, Ct.,	1	
Belfast, Naturalists' Field Club,		1
Bergen, Bergenske Museum,		1
Berkeley, University of California,		9
Berlin, Gesellschaft Naturforschender Freunde,		1
Bern, Naturforschende Gesellschaft,		2
Bolles, Rev. E. C., D.D.,	1	177
Bonn, Naturhistorischer Verein,	1	1
Bordeaux, Académie Nationale des Sciences, Belles-Lettres et Arts,	1	4
Bordeaux, Société Linnéenne,	1	
Boston, American Academy of Arts and Sciences,	1	1
Boston, Appalachian Mountain Club,		1
Boston Board of Health,		12
Boston, City of,	6	
Boston, Massachusetts General Hospital,		2
Boston, Massachusetts Historical Society,	3	
Boston, Massachusetts Horticultural Society,		2
Boston, Massachusetts Institute of Technology,		1
Boston, Massachusetts Medical Society,		1
Boston, Massachusetts State Board of Health,	1	32
Boston, National Association of Wool Manufacturers,	1	5
Boston, New England Historic Genealogical Society,		7
Boston Public Library,		3
Boston Scientific Society,		3
Boston Society of Natural History,		7
Briggs, N.A., Shaker Village, N. H.,		12
Bristol, Eng., Naturalists' Society,		2
Brooklyn, N. Y., Brooklyn Library,		1
Brooks, H. M.,	1	1

	Vols.	Pam.
Brookville, Ind., Society of Natural History, . . .		1
Brown, Henry A.,		60
Browne, Miss Alice, Newspapers,		
Brünn, Naturforschender Verein,	2	4
Brunswick, Me., Bowdoin College Library,	1	3
Bruxelles, Société Belge de Microscopie,		9
Bruxelles, Société Entomologique de Belgique, . .	1	
Bruxelles, Société Malacologique de Belgique, . .	1	13
Buenos Aires, Sociedad Científica Argentina, . .		12
Buffalo, N. Y., Buffalo Library,		2
Buffalo, N. Y., Society of Natural Sciences, . . .		1
Cabot, Mrs. J. S.,	9	
Caen, Académie Nationale des Sciences, Arts et Belles- Lettres,	1	
Calcutta, Geological Survey of India,	1	12
Call, R. Ellsworth, Topeka, Kan.,		1
Cambridge, Harvard University,	1	11
Cambridge, Museum of Comparative Zoölogy, . . .		6
Cambridge, Peabody Museum of American Archæology and Ethnology,		2
Canada Royal Society,	1	
Carpenter, Rev. C. C., Andover,		1
Cassel, Verein für Naturkunde,	1	1
Champaign, Ill., State Laboratory of Natural History, .		1
Charleston, S. C., Elliott Society of Science and Art, .		1
Chever, Edward E.,		2
Chicago, Ill., Public Library,		1
Childs, George W., Philadelphia, Pa.,		1
Christiania, Royal University of Norway,	4	5
Christiania, Videnskabs Selskabet,	2	
Cincinnati, O., Historical and Philosophical Society, .		2
Cincinnati, O., Mechanics' Institute,		1
Cincinnati, O., Public Library,		1
Cincinnati, O., Society of Natural History,		4
Clarke, Robert & Co., Cincinnati, O.,	1	
Cogswell, William,		1
Colcord, Mrs. H. M., South Peabody,	1	
Cole, Mrs. N. D., Newspapers,		40
Conrad, B. S., Georgetown, Demerara,	1	
Copenhagen, Société Botanique,		6
Copenhagen, Société Royale des Antiquaires du Nord, .		2
Cordoba, Academia Nacional de Ciencias,		9
Corwin, E. T., Millstone, N. J.,	1	

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Curwen, James B.,		30
Cutter, A. E., Charlestown,		1
Dakota Bureau of Statistics,		2
Damon, Robin,	13	
Dana, James, Boston,	1	
Danzig, Naturforschende Gesellschaft,	1	
Darling, C. W., Utica, N. Y.,		1
Darmstadt, Verein für Erdkunde,	1	
Davenport, Iowa, Academy of Natural Sciences,	1	
Detroit, Mich., Public Library,	25	1
Dimond, Mrs. A.,	20	
Dixon, Mrs. Sarah N. (Pope), Estate of,	1	
Dresden, Naturwissenschaftliche Gesellschaft,		2
Dresden, Verein für Erdkunde,		1
Dublin Royal Society,		9
Dunlap, Lauren, Huron, D. T.,	1	
Ellery, Harrison, Boston, Newspapers,		
Emden, Naturforschende Gesellschaft,		1
Emmerton, James A.,	3	123
Erfurt, Akademie gemeinnütziger Wissenschaften,	1	
Erlangen, Physikalisch-medicinische Societät,		1
Essex Agricultural Society,	1	
Essex, Eng., Essex Field Club,		5
Evans, F. L.,		1
Exeter, N. H., Phillips Exeter Academy,		1
Falmouth, Eng., Royal Cornwall Polytechnic Society,	1	
Farley, Mrs. M. C.,	48	
Farmer, Moses G., Eliot, Me.,	5	
Faxon, Walter, Cambridge,	2	12
Felton, Luther H., } Boston,		
Felton, Frederick L., }	1	
Firenze, R. Biblioteca Nazionale Centrale,		30
Firenze, R. Istituto di Studi Superiori,	1	2
Fiske, Mrs. Jerome H., Malden, Newspapers,		
Frankfurt, a. m. Naturwissenschaftlicher Verein,		1
Frankfurt, a. m. Senckenbergische Naturforschende Gesellschaft,		6
Garrison, Francis J., Boston,	2	
Genève, Institut National Genévois,	1	
Giessen, Oberhessische Gesellschaft,	1	
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Gorman, A. P., Washington, D. C.,		1
Gould, John H., Topsfield,	3	2
Gould, Miss Susie C., Topsfield, Map,		
Green, Samuel A., Boston,	61	681
Griffin, M. I. J., Philadelphia, Pa.,		1
Guild, Reuben A., Providence, R. I.,		1
Güstrow, Verein der Freunde der Naturgeschichte in Mecklenburg,	1	
Hackett, Frank W., Washington, D. C.,		1
Halifax, N. S. Institute of Natural Science,		2
Halle, K. Leop.-Carol. D. Akademie der Naturforscher,		5
Hamburg, Naturwissenschaftlicher Verein,		2
Hamilton, Morris R., Newark, N. J.,	1	
Hamilton, R. I., Narragansett Historical Publishing Co.,		4
Hampden, John, Balham, Eng.,		4
Harlem, Société Hollandaise des Sciences,		7
Harriman, N. H., Georgetown,		2
Hartford, Connecticut Historical Society,		1
Hartford, Ct., Trinity College,		1
Hassam, John T., Boston,		1
Hazen, Rev. Henry A., Boston,		1
Hildreth, J. L., Cambridge,	1	
Hill, Hamilton A., Boston,	2	
Hill, William M.,		4
Hoffman, Mrs. Charles,		395
Holmes, John C., Detroit, Mich., Map,		
Horton, Miss A. B., Newspapers,		
Howard, Joseph Jackson, Blackheath, Eng.,		15
Hubbard, Miss M. B., Lawrence,	4	2
Hull, John Henry, New York, N. Y.,	1	
Hunt, Miss S. E.,		21
Hunt, T. F.,	653	198
Huron, D. T., Department of Immigration,		8
Iowa City, Ia., State Historical Society,		4
Ireson, Mrs. C. K.,		1
Israel, Rev. F., Newspapers,	6	31
Ithaca, N. Y., Cornell University,	1	35
Ives, H. P.,	5	
Jewett, Mrs. George B., Newspapers,	27	179
Kimball, James P., Washington, D. C.,	2	
King, Henry F., Newspapers,		

	Vols.	Pam.
King, Miss H. M.,		2
Kingsley, J. S., Malden, Newspapers,		167
Kjöbenhavn, K. D. Videnskabernes Selskab,		3
Königsberg, Physikalisch Oekonomische Gesellschaft,		1
Lamson, Rev. D. F., Manchester,		1
Lane, Rev. James P., Norton,		1
Langworthy, Rev. I. P., Boston,		1
Lansing, Mich., State Board of Agriculture,	1	
Lansing, Mich., State Library,	31	19
Lausanne, Société Vaudoise des Sciences Naturelles,		2
Lawrence, Geo. N., New York, N. Y.,		4
Lawrence Public Library,		1
Leavitt, Mrs. William,	27	14
Lee, F. H., Newspapers,	1	203
Leeds, Eng., Conchological Society,		5
Leiden, L'Université,		1
Le Mans, Société d'Agriculture, Sciences et Arts de la Sarthe,		2
Liège, Société Royale des Sciences,	1	
Lincoln, Neb., State Historical Society,	1	28
Little, Brown & Co., Boston,	1	
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Liverpool, Eng., Literary and Philosophical Society,	2	
Lockwood, Samuel, Freehold, N. J.,		1
London Royal Society,		11
Lowell, Old Residents' Historical Association,		1
Lund, K. Universitetet,	1	3
Luxembourg, L'Institut Royal Grand Ducal,		1
Lyon, Académie des Sciences, Belles-Lettres et Arts,	2	
Lyon, Société d'Agriculture, Histoire Naturelle et Arts Utiles,		4
Lyon, Société Linnéenne,	2	
McDaniel, Rev. B. F., San Diego, Cal.,	5	469
McFarland, Miss E. K., Newspapers,	3	
Madison, Wis., State Historical Society,		1
Madrid, Sociedad Española de Historia Natural,		3
Manchester, Rev. L. C., Lowell,		1
Manning, Robert, Newspapers,	6	131
Marburg, Gesellschaft zur Beförderung der gesammten Naturwissenschaften,		
Marsh, Lucius B., Boston,	1	3
Marshall, William, New York, N. Y.,	1	
Massachusetts, Secretary of the Commonwealth of,	8	

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Mexico, Museo Nacional,		1
Michigan Agricultural College,	1	8
Middletown, Ct., Wesleyan University,		1
Montreal Committee of British Association for the Advancement of Science,	1	
Montreal, Natural History Society,		4
Morse, E. S.,		49
München, K. B. Akademie der Wissenschaften,		10
Münster, Provinzial Verein für Wissenschaft u. Kunst,	1	
Napoli, R. Accademia di Scienze Fisiche e Matematiche,	3	2
Newark, New Jersey Historical Society,	1	2
New Bedford Public Library,		1
Newhall, Miss Eliza G.,	22	45
New Haven, Connecticut Academy of Arts and Sciences,		1
New Haven, Ct., Yale College,	1	5
Newport, R. I., Historical Society,		1
Newport, R. I., Redwood Library,		1
New York Central and Hudson River R. R. Co.,		1
New York, N. Y., Academy of Sciences,		3
New York, N. Y., American Geographical Society,		10
New York, N. Y., Chamber of Commerce,	1	
New York, N. Y., Columbia College,		1
New York, N. Y., Genealogical and Biographical Society,		4
New York, N. Y., Historical Society,		1
New York, N. Y., Mercantile Library Association,		2
New York, N. Y., Microscopical Society,		8
Northend, William D.,	12	129
Norwegian North Atlantic Expedition,		2
Nourse, Miss Dorcas C., Newspapers,		
Nourse, Miss Jane, Newspapers,		
Nurnberg, Naturhistorische Gesellschaft,		1
Osgood, John C.,	5	157
Ottawa, Geological and Natural History Survey of Canada,	2	1
Ottawa, L'Institut Canadien-Français,		8
Packard, Rev. P. W.,		1
Palermo, R. Accademia di Scienze, Lettere e Belle Arti,	1	
Palfray, Charles W.,	1	412
Paris, Société d'Acclimatation,		10
Paris, Société d'Anthropologie,		4
Paris, Société des Etudes Historiques,	2	
Parker, H. J., Boston,		1

	Vols.	Pam.
Peabody, Henry W.,	1	
Peabody, Mrs. Martha, Maps, Charts, Views,	3055	1103
Peabody Reporter Co., Newspapers,		
Peabody, S. Endicott, Maps,	163	163
Peet, Rev. S. D., Clinton, Wis.,		6
Peoria, Ill., Scientific Association,		1
Perkins, George A.,	3	41
Perry, Rev. William S., Davenport, Ia.,		1
Philadelphia, Pa., Academy of Fine Arts,		3
Philadelphia, Pa., Academy of Natural Sciences,		3
Philadelphia, Pa., American Catholic Historical Society,		4
Philadelphia, Pa., American Philosophical Society,		3
Philadelphia, Pa., Historical Society,		4
Philadelphia, Pa., Library Company,		2
Philadelphia, Pa., Library of the Franklin Institute,		1
Philadelphia, Pa., Numismatic and Antiquarian Society,		1
Philadelphia, Pa., Zoölogical Society,		1
Philbrick, Miss Eliza,		2
Plumer, Miss Mary N., Newspapers,	16	329
Pool, Wellington, Wenham,		2
Portland, Maine Historical Society,		1
Poughkeepsie, N. Y., Vassar Brothers' Institute,		1
Pratt Manufacturing Co., New York, N. Y.,		1
Providence, Rhode Island Historical Society,		2
Providence, R. I., Public Library,		1
Pulsifer, David, Boston,		3
Putnam, Edmund Q., Newspapers,		
Quebec Literary and Historical Society,		1
Rantoul, R. S.,		13
Reeve, J. T., Appleton, Wis.,		1
Regensburg, K. B. Botanische Gesellschaft,		1
Regensburg, Naturwissenschaftlicher Verein,		1
Rhoades, Miss Louisa A.,	2	3
Richmond, Virginia Historical Society,		2
Rider, Sidney S., Providence, R. I.,	14	26
Riga, Naturforschender Verein,		1
Robinson, John,	21	166
Rochester, N. Y., Warner Observatory,		2
Roma, Biblioteca Nazionale Centrale Emanuele,		6
Ropes, Willis H., Newspapers,		2
Russell, Mrs. L. A.,	1	1
St. Gallen, St. Gallische Naturwissenschaftliche Gesellschaft,		1
St. Louis, Mo., Academy of Science,		1

	Vols.	Pam.
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St. Paul, Minnesota Historical Society,		4
St. Pétersbourg, Académie Impériale des Sciences,		19
St. Pétersbourg, Société Entomologique,	1	
St. Petersburg, Imperial Botanic Garden,		1
Salem, City of,	1	
Salem, East Church Parish Committee,	1	
Salem Fraternity,		10
Salem, Peabody Academy of Science,	23	200
San Diego, Cal., Natural History Society,		9
San Francisco, Cal., Academy of Sciences,		1
San Francisco, Cal., Mercantile Library Company,		1
Sargent, Miss Mary E., Lowell,		2
Savannah, Georgia Historical Society,		1
Scranton, Pa., Lackawanna Institute of History and Science,		2
Sener, S. M., Lancaster, Pa.,		1
'SGravenhage, Nederlandsche Entomologische Vereeniging,		7
Shanghai, China Branch of the Royal Asiatic Society,		3
Sims, William, Topeka, Kan.,	1	
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Smith, George Plumer, Philadelphia, Pa.,	1	1
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Springfield, Illinois Department of Agriculture,		4
Stettin, Entomologischer Verein,	2	
Stimpson, T. M., Newspapers,		
Stockholm, Entomologiska Föreningen,		3
Stone, B. W.,	4	1
Stone, Eben F., Washington, D. C.,	3	148
Stone, Robert, Newspapers,		
Story, Estate of Miss E. A.,	1318	3028
Stratton, Charles E., Boston,		1
Swan, Miss Sarah H., Cambridge,	1	
Sydney, New South Wales Department of Mines,	1	
Sydney, Royal Society of New South Wales,	1	
Tasmania, Government of,	1	
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Thronhjelm, K. N. Videnskabs Selskabs,		2
Tierney, P. F.,	1	3
Tilton, John P.,		5
Topeka, Kansas Historical Society,	33	96
Topeka, Kan., Washburn College Laboratory of Natural History,		3
Toppa, Charles,	5	

	Vols. Pam.	
Toronto, Canadian Institute,	3	
Trenton, N. J., Natural History Society,	1	
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Unknown,	3	10
Upham, William P., Newspapers,	1	12
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U. S. Bureau of Education,	2	2
U. S. Chief Signal Officer, Charts,	2	
U. S. Civil Service Commission,	1	
U. S. Coast and Geodetic Survey,	1	
U. S. Comptroller of the Currency,	1	
U. S. Department of the Interior,	104	4
U. S. Department of State,	5	13
U. S. Fish Commission,	2	4
U. S. Geological Survey,	4	10
U. S. Life Saving Service,	1	
U. S. National Museum,		29
U. S. Naval Observatory,	1	
U. S. Navy Department,		4
U. S. Patent Office,	5	53
U. S. Treasury Department,	3	
U. S. War Department,	5	
Walker, Abbott, Hamilton,	1	
Walton, E. N.,		1
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Washington, D. C., National Academy of Sciences,		1
Washington, D. C., Smithsonian Institution,	1	
Watanabe, H., Tokyo, Japan,		1
Waters, D. P., Newspapers,	160	103
Waters, E. Stanley,	1	1
Waters, J. Linton, Circulars, Newspapers,	4	6
Waterville, Me., Colby University,	1	
Watson, S. M., Portland, Me.,	3	
Webb, F. R., Auckland, N. Z., Newspapers,		
Webb, William G., Newspapers,		1
Weston, Charles H.,	1795	
Wheatland, Miss Elizabeth,	1	
Whipple, George M.,	18	7
Whittredge, Charles E.,	2	
Wien, K. K. Zoologisch-Botanische Gesellschaft,		3
Wien, Verein zur Verbreitung Naturwissenschaftliche Kenntnisse,	2	
Wiesbaden, Verein für Naturkunde,		1

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Wilder, Edward B., Dorchester,		1
Wildes, Rev. George D., Riverdale, N. Y.,		1
Wilkes Barré, Pa., Wyoming Historical and Geological - Society,	1	1
Williams, J. F., St. Paul, Minn.,		2
Willson, Rev. E. B.,		160
Winchell, N. H., Minneapolis, Minn.,	2	
Winsor, Justin, Cambridge,		26
Winthrop, Robert C., Boston,	1	
Woods, Mrs. Kate T.,		1
Worcester, American Antiquarian Society,	47	172
Worcester, Samuel,	1	3
Worcester, Society of Antiquity,	1	1
Wright, W. H. K., Plymouth, Eng.,		11
Würzburg, Physikalisch-Medicinische Gesellschaft,	2	
Young, H. H., St. Paul, Minn.,		1

The following have been received from editors or publishers :

American Exchange and Mart.	Naturalists' Leisure Hour and Monthly Bulletin.
American Journal of Science and Art.	Nature.
Bay State Monthly.	New England Magazine.
Cape Ann Advertiser.	Our Dumb Animals.
Chicago Journal of Commerce.	Peabody Press.
Danvers Mirror.	Peabody Reporter.
Fireside Favorite.	Sailors' Magazine and Seamen's Friend.
Gardener's Monthly and Horti- culturist.	Salem Daily Times.
Ipswich Chronicle.	Salem Evening News.
La Bibliophilie.	Salem Gazette.
Lawrence American.	Salem Observer.
Le Naturaliste Canadien.	Salem Register.
Lynn Bee.	Salem Telegram.
Manifesto, The.	Traveller's Record.
Marblehead Messenger.	Turner's Public Spirit.
Musical Herald.	Voice, The.
Musical Record.	Wade's Fibre and Fabric.
Nation, The.	Zoologischer Anzeiger.

PUBLICATIONS. As heretofore, the Historical Collections and the Bulletin have been issued ; both the historical and the scientific departments receive valuable accessions in exchange for these from kindred societies in other countries as well as in our own land.

A ROSE SHOW was held on June 23. Some forty different varieties were shown and among them were some very beautiful specimens. A peculiar flowering shrub,¹ bearing a handsome flower and a profusion of blossoms, was contributed by Mr. Robert Manning, who received honorable mention. Mr. John Robinson exhibited a Japanese rose and several beautiful specimens of the hardy rose, for which he received honorable mention; as did Mr. Geo. R. Emmerton, Mrs. S. G. Wheatland, Mrs. C. H. Miller, Mrs. D. A. Varney, Mrs. H. A. Cook, Mr. Geo. D. Putnam, Mr. James F. Almy and Mrs. William M. Whitney of Beverly, for their exhibits. There were twenty-three exhibitors; premiums of moderate amounts were awarded to Charles E. Marsh of Lynn, William J. Foster of Salem, and J. M. Ward of Peabody.

MUSEUM. The specimens in natural history including those in archæology, which have been received during the year, have been placed on deposit with the trustees of the Peabody Academy of Science, in accordance with previous arrangements. Those of an historical character, or which possess an artistic interest, have been placed in the rooms. There have been one hundred and ninety-eight contributions; prominent among these is a large and rare collection of War Envelopes, which was made with much care and at considerable cost by the late Mr. George Perkins of this city, who while living was an active and useful member of the Institute. A valuable historical painting, "The Last Haven," by Ross Turner, and "Pastures by the Sea," by Miss Fidelia Bridges, of New York, have been presented by the artists and will adorn the walls of the new building.

The donors to the museum are the following:—

¹ *Actinidia polygama*.

Edwin R. Ide, Mrs. Kate T. Woods, John Robinson, Francis H. Lee, J. Linton Waters, Samuel A. Green of Boston, Robert S. Rantoul, Charles A. Ropes, S. Endicott Peabody, Daniel C. Beckett, Estate of Aaron Perkins, George A. Perkins, Charles H. Andrews, Abner C. Goodell, Jr., Frank Cousins, Mrs. Rebecca D. Nesmith of Reading, Samuel Worcester, Ellsworth Stewart of Michigan, Misses M. E. & A. O. Williams, Edward S. Morse, Peabody Academy of Science, T. F. Hunt, Henry M. Brooks, George Upton, Joseph Nichols, John Larcom of Beverly Farms, B. F. McDaniel, B. H. Fabens, Harriet M. White of Wenham, John Battis, 2nd, Mrs. William Leavitt, James B. Curwen, R. L. Newcomb, Daniel C. Haskell, Charles R. Waters, Thomas R. Fallon of No. Carolina.

THE NINTH ART EXHIBITION opened on June 3 ; the preceding evening a reception was given to the contributors and their immediate friends ; a lunch was served and the visitors were entertained with orchestral music under the direction of F. Clayton Record ; the exhibition closed on June 19. It was confined to paintings in oil, water colors, charcoal, etc., by the artists and amateurs of Salem and its immediate vicinity. A large majority of the artists were residents of this city, and Salem may take just pride in the genuine artistic merit here displayed. The collection embraced two hundred and forty-six exhibits, and was especially strong in figure pieces and portraits ; including a very striking portrait of the daughter of Ralph Waldo Emerson, by J. J. Redmond ; that of Salem's well-known and oldest clergyman, Rev. E. B. Willson, by F. W. Benson ; one of Clark Oliver, most life-like, by C. C. Redmond, and the ideal portraiture of "Kilmeny" by Miss H. F. Osborne. A portion of the pictures were arranged for a summer exhibition and remained in the hall through July and August. The collection was larger and more varied than usual. Among the more celebrated artists who contributed this year may be mentioned Ross Turner, George H. Clement, Philip Little, H. A. Hallett, F. W. Benson, George W. Harvey. The exhibition was considered by competent judges to be of more than usual merit.

The following is a list of the artists and contributors :—

Miss A. A. Agge.	Miss S. E. C. Oliver.
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Mrs. A. G. Higginson.	Mrs. G. L. Streeter.
Mrs. E. Hobbs.	Miss A. S. Tukey.
Miss Minnie L. Hobbs.	Ross Turner.
Miss A. B. Holden.	Miss Ida F. Upton.
Miss Lucy B. Hood.	Miss J. S. Warden.
Miss S. S. Kimball.	Miss M. L. Webb.
Miss L. Lander.	Miss I. Whidden.
Mrs. E. A. Leavitt.	Miss L. B. Whipple.
Philip Little.	Miss E. O. Williams.
Miss M. Lyman.	Mrs. E. B. Willson.
Mrs. W. S. Nevins.	Mrs. Frank Winn.
George Newcomb.	

FINANCIAL.—The Treasurer's report of the receipts and expenditures of the past year (condensed for printing) :

RECEIPTS.

Balance of last year's account,	\$112 33
Assessments of members,	854
Income of invested funds,	2,185 16
Sale of publications,	947 45
Income from rents,	133 87
Salem Athenæum, portion of bills paid,	172 37
	<hr/>
	4,405 18

EXPENDITURES.

Salaries of secretary, ass't librarian, and janitor,	1,920	
Publications and printing,	1,330	47
Books, binding and miscellaneous printing,	623	20
Fuel, gas, stationery, express and incidentals,	354	29
Salem Athenæum, per agreement,	300	
Salem Athenæum, service of librarian,	50	
Annuities (with legacies),	160	
		<hr/>
		4,737 96
Income short of expenses,		332 78
Received legacy from estate of Martha G. Wheatland,	10,000	
“ extra Dividend Pepperell Manf. Co. Cr. same account,	800	
“ legacy from estate of Esther C. Mack,	4,000	
		<hr/>
		14,800
Investment of legacy of M. G. Wheatland,		10,008 25
Balance on hand at close of account,		4,458 97
		<hr/>
		\$14,800 00

May 16, 1887.

Respectfully submitted,

GEO. D. PHIPPEN, *Treasurer.*

Examined and approved,

R. C. MANNING, *Auditor.*

The above legacies increase the interest-bearing funds of the Institute to about \$50,000, exclusive of the cost of the Daland House, and its improvements.

The Institute has a right to be congratulated on the success of the past year as well as on the bright prospect for a prosperous future. The new building so long hoped for is now ready for occupancy and will, it is believed, fully realize the anticipations of the friends of the project. It is the intention of the Directors to open the building for the inspection of members that they may see for themselves the new house which the liberality of their friends has made it possible for the Institute to purchase. Already an increase in membership shows that the public is ready to encourage and sustain the society in its new departure and a much larger accession of members may be expected as the increased advantages, which the new building enables the Institute to offer, shall be made known.

BULLETIN

OF THE

ESSEX INSTITUTE.

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ON THE SANTHALS, A SEMI-BARBAROUS TRIBE OF NORTHEASTERN BENGAL.

BY DR. SAMUEL KNEFLAND.

WHEN in Copenhagen in 1885, I had the opportunity to see some photographs of the Santhal tribe, and afterward obtained possession of some ornaments worn by the Santhals, a tribe of northeast Bengal, before their conversion to Christianity by Messrs. Børresen and Skefsrud of the Danish mission, established and successfully carried on by them at Ebenezer station, in the hill districts to the northwest of Calcutta, from the year 1867. Before describing these specimens a brief account of the character, manners and customs of this people, as obtained from Danish missionaries and English officers, and acquaintance with their race in Ceylon, may be interesting.

The Santhals are probably from the same stock as the Kharwars, an aboriginal race which, after long wanderings in the highlands of Asia, came to India many thousand years ago. They seem to have been the first dwellers in India, but were followed by degrees from Central Asia by many other peoples, of whom the Hindoos were the most powerful and best known. Colonel Dalton (*Ethnology of*

Bengal, Calcutta, 1872) divides the aboriginal, non-Aryan tribes of Bengal into two great sections: (1) the Dravidian, who speak a language allied to the Tamulian, and (2) the Kolarian, whose language is like that of the Santhals, Mundas, etc., the latter coming as he believes from a remote northeastern region, and many of them now Hinduized. This would place the Dravidians in the south, and the Kolarians in the north of India, but many are of opinion that they were originally the same stock, separated by invading races, and modified in language, characteristics, and customs by admixture with other tribes and different surroundings; in this view the Santhals may have belonged to the Kharwar stock, which has become much Hinduized, and to which they are related even now by physical characters and customs, and yet be also related, more remotely in time, to the southern Dravidians.

They dwell in the northeast corner of Bengal, among the Vindhya mountains, and their country is called Santhalistan. The river Ganges flows around its eastern portion, and the city of Calcutta is about one hundred and thirty-five miles to the southeast of their present central home; two railroads pass through the country, yet from their hilly position, they are quite outside the limits of European civilization.

They occur sometimes in considerable numbers, but usually in small communities, in a strip of Bengal extending about 350 miles from the Ganges to the Baitarni, the Hindoo Styx, bisected by the meridian of Bhagalpur, or 87° E. long. and 23° to 25° N. lat. In the present Santhalistan, their chief centre, are now over 200,000, and their total population is at least three millions. The Damuda river, highly venerated by the Santhals, empties into the Hoogly, or west branch of the Ganges, not far from Calcutta.

During an insurrection in 1854 against the Hindoo and other money-lenders, who were rapidly obtaining possession of their lands, they found themselves arrayed against the English; the insurrection was suppressed after much bloodshed, and they were colonized in their present locality, the Santhal Pargana district, under a better administration, and with a partial restoration of their old form of self-government. Fond of the forest and the virgin soil in their wild state, they remove from a cultivated region to the woods again; hence their traditions, though pointing to remote antiquity, are rather obscure and incoherent. Modified by intercourse with surrounding tribes, and recently by Christianity, they still have many old practices, and preserve the language which probably prevailed about the Ganges in pre-Aryan times.

They came to their present localities about one hundred and twenty-five years ago, harassed and driven from place to place by the Hindoos, who, it is said, gave them in derision the name of Santhals, from the word *sandal*, a foot sole, implying that they were fit only to be trodden under foot, which has truly been their fate for many a day. Another derivation of their name is that, in their wanderings they settled for a time at Saont, the present Silda, and hence were called Saontháls, Santháls.

As tribe after tribe invaded India, some from the north-east and some from the northwest, at last came the Hindoos, thoroughly hated by the Santhals, who subjugated all the others until they themselves had to submit to the English, now the masters of the country, who entered India from the sea, enriching themselves enormously without exhausting this wonderfully favored land which, though almost as large as Europe, forms only a small part of the vast continent of Asia; its inhabitants number some 200,000,000, for the most part Buddhists, Brahmanists and

Mohammedans. The Hindoos are about four to one of the Mahommedans, who are the descendants of the old Moguls or Monguls, abhorring the religion of the Hindoos, and most numerous in the eastern districts; the Hindoos predominate in central India, and the aboriginal stocks in the hilly districts of the north, the southern portions, and Ceylon. At the beginning of the Christian era Buddhism prevailed, but was largely supplanted by Brahmanism after 500 A. D. About 1590 the country was conquered by the Mahommedan emperor Akbar, and became a part of the Great Mogul empire, with a mixture of the three religions, though chiefly Buddhist. Since 1757 when the native ruler was defeated by Lord Clive, it has been under the rule of the English. Most of the pre-Aryan tribes, originally pantheists, had been more or less modified in their religion by their successive conquerors.

The Santhals, like the Israelites, are divided into twelve tribes, and each tribe into twelve stocks or families; every child on the fourth day after birth is made a member of its family by a pagan baptism, with the sprinkling of water and the juice of fruit, in the presence of the people.

Their land is a rather sterile mountain region, and therefore agriculture and the raising of cattle, which should be their chief occupations, are not extensively pursued. On the plains and in the valleys there are three seasons: 1. The *hot* from the middle of March to the middle of June, with a heat of 100° Fahr. in the shade, sometimes rising to 130°, when hot winds blow over the land. The latitude is about 25° N.; 2. The *rainy* season, after this, until into September, when the air, especially in the wooded districts, is sultry and unhealthy, and poisonous vermin swarm; 3. The *cool* season, from September to March in which occur the harvests. The first crop, that of maize, is gathered at the end of the rainy season, in the middle

of September ; the only other crop, that of rice, about New Year's time. The crops depend on the rain ; if this comes not, want attacks this improvident people, and should a drought follow the next year, there is a famine. Although the land is poor, it is not without beauty ; the forest-covered mountain slopes, the deep ravines and rushing torrents give each locality much attraction to those who love grand wild Nature. There is not a little forest richness, dense thickets, and magnificent semitropical vegetation ; there is a multitude of noisy, many-colored birds, and many songsters. Wild animals in abundance dwell in the thickets, and the tiger is a terror to both man and beast. The trees change their leaves twice a year, after the rainy season, and before the hot one, or in September and March.

The Santhals once had a far higher culture than at present ; this can be traced in their language, which is uncommonly well developed, rich both in words and in forms. Their many old fables and songs indicate manners and customs and wise sayings, transmitted orally from generation to generation, pointing both to a language and occupation of the country before the Aryan invasion.

The religion of the Santhals, like that of all rude peoples, was a species of pantheism, afterward modified by the tenets of Buddhism, Brahmanism, Mohammedanism, and, during the last century, of Christianity. According to their most widely-spread tradition, Thakur, the almighty, omniscient, all-seeing, and all good God, who dwells in Heaven, above the stars, is the creator of all good and bad men, and of devils. At his command the earth came out from the waters, and became the abode of animals which he formed from it. At last he made from two clods of earth the first pair, the man Hadow and the woman Aio, whom he made living by blowing into their nostrils. They lived for a time in happy innocence, and were not ashamed

of their nakedness ; but this happiness was destroyed by the evil spirit, Marang Baru. He announced himself as their grandfather, and promised them still greater happiness from the use of an intoxicating drink, which he taught them to make. It is singular that, in this ancient tradition, an intoxicating drink should be considered the root of all evil to man, for all experience since has shown that it is a principal one. By degrees they gave themselves and their progeny up to this drink, and in their impurity the latter sank to such a brutal condition that marriage was done away with ; and when Thakur called them to account for their sins, they so hardened themselves against his voice, that he resolved to destroy the depraved race. There came a rain of water or fire (the tradition varies in this respect), and all the race perished, except a single good man and his wife, who were saved by Thakur's foresight, with some animals, in a mountain cave (Harata). One cannot fail to notice the resemblance here, both in name and events, to the Mosaic Adam and Eve, the temptation by the devil, the fall, the destruction of the race, and survival of a pair on Ararat ; but which tradition is the anterior, it is not easy to decide. From these two survivors sprang the present race of men. On the plain around Harata, they dwelt and built for a time, but as their numbers multiplied they spread to the north and the south, the east and the west, and could not in their different zones preserve the same language. The fathers of the Santal branch went to the east, and came after many years to an insurmountable mountain, which prevented further progress. Suffering from hunger, in their distress, they called to the mighty spirit, who they thought dwelt in the mountain, and was the cause of their misfortune. In the morning the sun shone through a narrow pass, which they had not discovered, so that they found their way out ; but

from this time they worshipped both the beautiful sun and the wicked mountain spirit, Marang Baru ; and afterward many other false beings or "Bongas," with which by degrees they invested all existing things, trees, stones, etc. This account of the religion of the Santhals, I take from the records of the Danish mission in Ebenezer, Bengal.

Col. Dalton (Ethnology of Bengal) mentions a tradition which says that "a wild goose coming from the great ocean, alighted and laid two eggs, from which came out a man and a woman, the progenitors of the Santhal race. As they increased in numbers they changed their locality, and were called Kharwars ; and they at last came to a place where they remained for several generations. Fleeing from a powerful enemy, they reached the 'great mountain', Marang Baru, which interposed its mass in the way of their pursuers, and thus they became worshippers of Marang Baru, sacrificing to him goats ; after many wanderings they came to their present location."

Some think that the "wild goose" was a white-sailed vessel which brought them across the bay of Bengal from the southwest. They know that their sacred Damuda river flows into this sea ; on this explanation, they probably first landed on the east coast of Bengal, going afterward westward and northward ; their traditions seem to indicate that they came from the south.

They have no single great chief around whom they gather, but live scattered in villages, each of which forms a little whole in itself. Each village has five officers : a head man or *manjhi*, a supervisor of youth, a herald or crier, a town priest and a country priest. The first two have each an assistant, making seven in all, but these are closely watched by certain townsmen chosen for the purpose. These officials, with some of the principal men, constitute the local court of justice, from which a case can be carried to a higher tribunal, presided over by the

highest magistrate in the *district*, the so-called *pargana*. The last has under its jurisdiction thirty to sixty villages, and forms a strong, connecting link between them. Many heads of towns and other chosen men have seats in this superior court; but over these is the voice of the public assembly, which has in its hands the final decision, like a supreme court. These customs indicate a former culture far superior to their present, though they have always preserved a kind of representative or self-government.

Their features are not sharply-marked, and there is a tendency to fulness of feature and of body. The face is almost round, with cheek bones moderately prominent; eyes full and without obliquity; nose not prominent, but broad and depressed; mouth large, with full and projecting lips; hair straight, coarse and black; they are negroid in color and appearance, and rarely more than five and one-half feet high. The females have small hands and feet, and peculiarly large and lustrous eyes which the ancients would call "ox-eyed," a compliment which they paid to the goddess Juno.

They have comfortable homes, huts with walls of mud, and floors well raised, to avoid dampness and creeping vermin. The houses are often surrounded by a kind of veranda of bamboo lattice work, covered with trailing vines and flowers; they are neatly kept and gayly colored with stripes of red, white and black, by the use of native clays and charcoal; they have partitions, securing privacy and decency. They prefer to have their villages to themselves and do not like foreigners, especially Brahmans; but as they clear and cultivate the land, the crafty and enterprising Hindoo gets admission, and, finally, obtains the mastery over their honest simplicity, and, sometimes, by offering higher rents to the government, ejects the Santhal.

When a child is about ten years old, he is taken into

the tribe by the branding of three marks. When grown he marries of his free choice, but woe to him if he breaks any of their marriage customs, for his life is in danger, unless his father pays a heavy fine for him. In families the father gives counsel and instruction in the customs of old times, for they hold in high honor the memory of their ancestors; grown-up sons continue to live under the authority of their parents, and many young families dwell together under one roof in their father's house, cultivating the ground in common. The oldest son is always named after his grandfather, and the others after other relatives; they adopt as a rite the tonsure of their children. There is great freedom between the sexes, and the old people have the utmost confidence in the virtue of the young; all travellers agree that their women are remarkably chaste. Marriage is generally arranged by the parents, though many are love matches and happy ones. The average price of a girl is five to six rupees, about \$2.50 to \$3.00, with presents of cloth to her parents. The value of a young girl may be as high as \$4.00 or \$5.00; a divorced woman is worth \$1.50, and a widow seventy-five cents to a dollar, according to age and charms. A boy is marriageable at sixteen, and a girl at thirteen years. The day for the marriage being fixed, a knotted string indicates the number of the days the bridegroom must wait; he unties one knot each day, and when the string is clear, he and his friends set out with noisy music for the bride's residence. No priest officiates, the meal eaten socially by the groom and bride being the chief part of the ceremony at a Santhal wedding, and, as they have been obliged to fast all day, the appetite is generally good, and this feature of the occasion well performed. She thus ceases to be a member of her father's tribe, and becomes one of her husband's family. The wife is usually kindly treated, and

should the husband, for any good reason, take a second wife, the first always remains the head of the domestic household. To appease the Bongas or evil spirits, a lamb is sometimes offered as a sacrifice ; this is killed by an axe, and the propitiatory fire is made to burn by blowing upon it through ox-horns. Their principal food is rice and curry ; knives, spoons and forks are unknown, and they use only their fingers ; it would be a mistake to lead them to adopt European customs in eating.

They are remarkable performers on the flute. This they make of bamboo, not less than an inch in diameter and two feet long ; it has six holes, and is played by four fingers of the right, and two of the left hand ; its tones are deep and rich. They are also good singers and dancers, skilful makers of intoxicating drinks, and have very jolly times. There is always an open space for dancing in front of the house of the head man of a village, where they dance evenings to the music of their flutes and drums of burnt clay. In one of their chief dances, the *Rasa*, the girls are decked with flowers and tinkling ornaments, and the young men with garlands and peacock feathers — taking hold of hands, and so close together that the breast of the girl is in contact with the back of the man next to her. Thus they go round in a great circle, all their legs moving as if they belonged to one creature, the feet falling in such perfect cadence as to put to shame the best drilled soldiers. The musicians are in the centre, fluting, drumming, and dancing, forming the axis of the movement, the dancers singing in response, just as described in the Vishnu Purana in the "dance of Krishna." Usually men and women do not dance together, but always in a row, forward and back, and around the musicians. They make no cloth, but obtain it from their neighbors, traders, and the English. The women wear an ample covering of

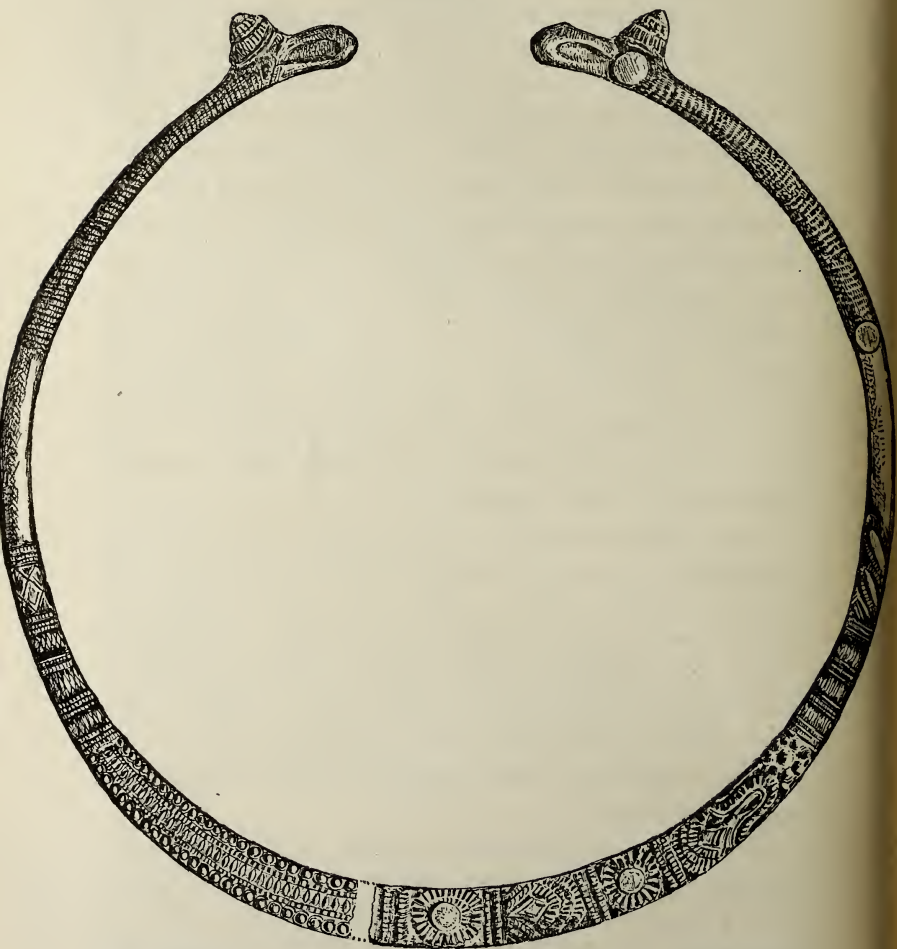
cotton-cloth, six yards long, with bright red border ; one-half of this forms their lower garment secured at the waist, but not impeding the free action of the limbs ; the other half is passed over the left shoulder, hanging down in front, leaving the right shoulder, arm, and part of the breast uncovered ; it is not used as a veil. With young girls the head is generally uncovered, and the mass of hair gathered into a large knot at one side of the back of the head, ornamented with flowers or tufts of colored silk. Of ornaments they are extremely fond, especially the women, who wear many kinds of amulets on strings around the neck, arm-rings, bracelets, ankle, finger, and toe-rings, which render domestic work very difficult and often painful. Since their conversion, almost all of these ornaments have been discarded, and they naturally wonder at the jewelry worn in their midst and in church by the European ladies of the mission and others, and innocently ask " have they been baptized ?"

I was fortunate enough to secure some of these barbaric ornaments, now unused except in the districts beyond the influence of the mission. They are very well made, of artistic designs and decorations, attesting considerable skill in the working of metals, and no little knowledge of the fine and mechanic arts of their more civilized neighbors ; this is probably not due to imitation, but is a remnant of their former refinement and culture, perhaps from pre-Aryan times.

FIGURE 1. A *neck-ring* of brass, weight 6 ounces ; diameter inside $6\frac{3}{8}$ inches, outside 7 inches ; circular ; open behind for $1\frac{7}{8}$ inches, flattened in front, cylindrical above, and each end terminating in a rounded point surmounted by a knob. It is chased very prettily on nearly its whole extent, with different patterns on the two surfaces. Where it came in contact with the sides of the

neck, the ornamentation is either absent, or worn off by friction.

FIG. 1.



Under surface.

NECK-RING. $\frac{2}{3}$ SIZE.

Upper surface.

These are worn by both sexes, and are so rigid that they must be put on when the wearer is so young that the ring

can go over the head; it cannot be removed from the adult except by breaking or filing it. It is astonishingly like the neck-rings worn by the Celtic, German, and Scandinavian warriors of antiquity, and reminds one of that around the neck of the "Dying Gladiator," who was probably a Gallic prisoner of war.

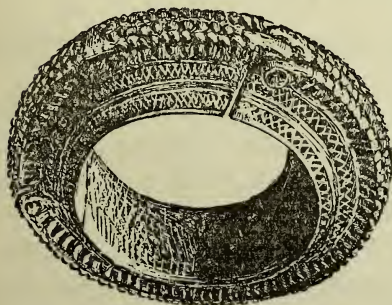
Bracelets. FIGURE 2. A closed bracelet of brass, weighing $1\frac{5}{8}$ ounces, widest diameter $2\frac{1}{4}$, narrowest 2 inches; thickness $\frac{1}{4}$ to $\frac{1}{8}$ of an inch. At the point of closure, on the back of the wrist, are two symmetrical knobs; it is neatly ornamented, and in many parts worn smooth by use. It must have been put on when the hand of the wearer was small enough to pass through its rigid opening.

FIG. 2.

BRACELET. $\frac{2}{3}$ SIZE.

FIGURE 3. A brass bracelet, weighing 3 ounces, extreme width outside $2\frac{7}{8}$ inches, circular opening for wrist

FIG. 3.

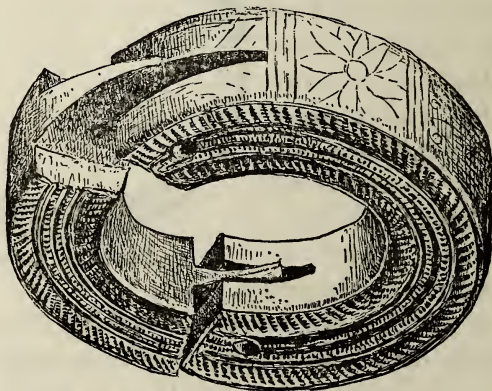
BRACELET. $\frac{2}{3}$ SIZE.

$1\frac{3}{4}$ to $1\frac{7}{8}$ inches in diameter. The external rim, $\frac{1}{4}$ of an inch wide, has three parallel rows of dots in longitudinal series, three dots in each transverse row, so that a definite pattern is followed: from this rim, the metal is symmetrically bevelled in two series

of chain work ornamentation, precisely the same above and below, divided by a plain groove; the external rim

is separated from the bevelled portion by a circular series of sixty-four oval perforations, making it lighter and more ornamental; the portion in contact with the skin is $\frac{3}{4}$ of an inch wide, and seems to have been lined with leather, now hardened, which was greased to prevent excoriation. One-third of the bracelet may be opened by a tongued joint for introducing the wrist, fastened by a wooden or metallic peg, so that it could be put on and off at will. Its lightness, symmetry, accurate proportions on the two surfaces, delicacy of the ornamentation, and well fitting

FIG. 4.

BRACELET. $\frac{2}{3}$ SIZE.

hinge, show a great skill as well as taste in the working of metals.

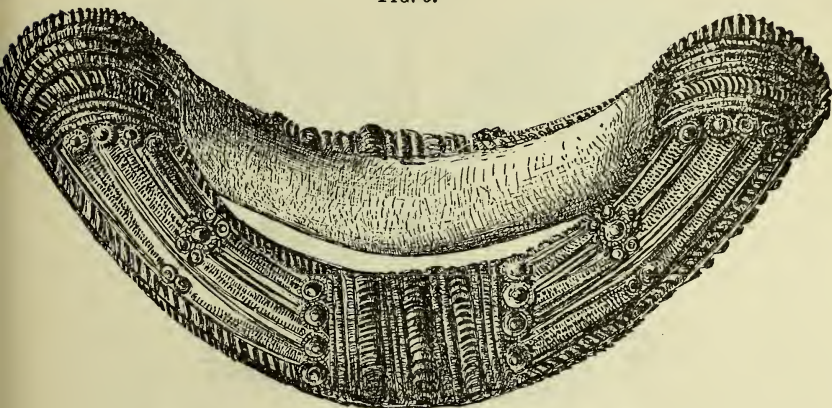
FIGURE 4. A solid brass bracelet, weighing $16\frac{1}{2}$ ounces, $3\frac{1}{8}$ inches in diameter outside; opening for wrist, circular, $1\frac{3}{4}$ inches, thickness $\frac{3}{4}$, and width $\frac{7}{8}$ of an inch. Quite smooth on the inside, and on the outside, where the ornamentations are almost obliterated by use; the ornamentation consists of concentric rings, three in number, of oblique interrupted lines, parallel grooves and raised dots the same on both external surfaces. On account of its weight it could not be worn constantly with comfort; to

enable the wearer to remove it, about $\frac{1}{4}$ of it can be opened by means of a triangular well-fitting long tongue, fastened by a peg of metal at each side.

Anklets. The most extraordinary ornaments worn by the females are the anklets of which I have two, one for an adult and one for a girl.

FIGURE 5 is an elliptical brass ring turned up at each end, and weighing $2\frac{1}{2}$ lbs. ; longitudinally it measures $6\frac{1}{2}$ inches, and transversely 4 inches ; the aperture which encloses the foot is in the same directions $3\frac{1}{2}$ and $2\frac{1}{2}$ inches.

FIG. 5.



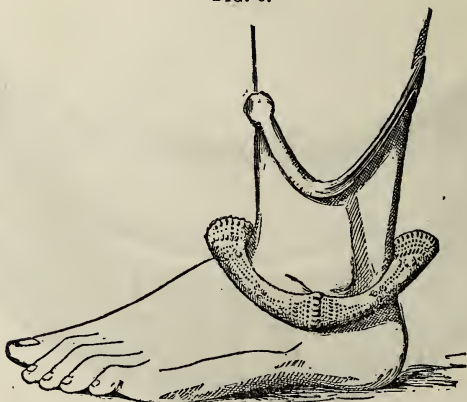
ANKLET. $\frac{1}{2}$ SIZE.

The part which comes in contact with the skin is smooth ; the upper and outside surfaces are ornamented with raised rosettes, continuous and dotted lines, and various prominences longitudinal and transverse ; the higher anterior and posterior portions are most highly ornamented, both above and below, and are nearly alike ; they seem to be casts, finished by hand. This is evidently for an adult, and is an inch in diameter, or three in circumference, at its smallest part, and a little thicker in the middle and at the ends ; design artistic.

FIGURE 6 shows the anklet for a young girl as worn upon the foot. This appears more like whitish bronze; it is $4\frac{3}{8}$ by 3 inches, weighs $11\frac{3}{4}$ ounces and the opening for the foot is $2\frac{3}{4}$ by $1\frac{3}{4}$ inches; it is of the same shape, and with almost the same ornamentation as the larger one, and the same characters as to proportions and design. The patterns for this ornament seem to have been few.

The present specimens, as are all before and afterward alluded to, are of bell-metal; no Santhal woman could do without these weights on her limbs; if she could not have

FIG. 6.

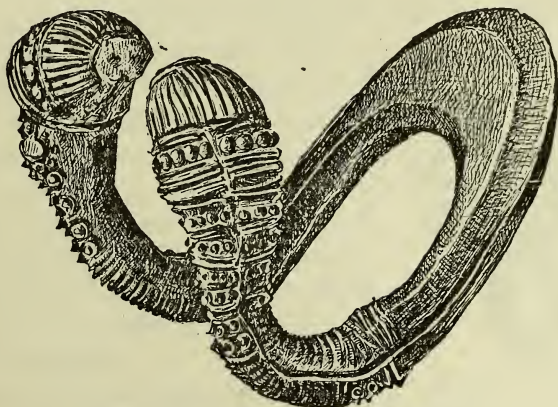


FOOT OF CHILD, SHOWING THE POSITION OF THE TWO ORNAMENTS.

them of silver, she would have them of brass; they delight to clink them together in their barbaric dances. These anklets, though usually slipped on without difficulty over the heels of the young girl, where they remain till she outgrows them, are sometimes forced on with great violence by the native makers, who place at first moistened leather over the heel and instep to prevent excoriation; as the weight on each foot, with the article next described, may be four pounds, it happens not unfrequently that the hard heavy metal cuts into the skin, causing great pain;

but it is all borne cheerfully for fashion's sake. With such an apparatus the Santhal woman was so manacled and handcuffed that she could do little more than carry it about; one hand had to support the other, or both were rested on the hips; she walked with difficulty, and was liable to accidents in the thickets from her neck-ring. Once on, they can only be removed by the file, and in their wild state to be replaced by larger and heavier ones. When Christianized they are glad to have them filed off, and then can do twice

FIG. 7.

CLASP WORN ABOVE THE ANKLET. $\frac{2}{3}$ SIZE.

the labor of their heavily adorned heathen sisters. They have been known to carry thus thirty pounds, but usually about twelve. The anklets are worn *below* the malleolar prominences, and are called *banki*.

Clasps or buckles for the leg above the anklet. Of these I have two. FIGURE 7 is one for an adult, weighing $1\frac{1}{2}$ pounds. The one for a child weighs $3\frac{1}{4}$ ounces, both of bell metal. These are the most singular of their ornaments, and had we not the drawings of the missionaries, it would be difficult to make out how they were worn. FIGURE 6 shows how these singular ornaments are worn.

One would at first think it was placed under the heel, coming up behind, under the ankle-ring ; but, on the contrary, it is worn above the anklet, $2\frac{1}{2}$ to 3 inches. It is shaped something like the letter U, and is bent almost at a right angle ; its two halves are precisely alike, and its upper posterior part is flattened from behind forward and quite smooth, as its surfaces come in contact with the skin of the posterior parts of the leg, especially when the limb is swollen, as one would think it must inevitably be. The anterior part consists of two branches with their usual ornamentation of dots, rings, and interrupted lines, rough

FIG. 8.

TOE-RING. $\frac{2}{3}$ SIZE.

on the outside but smooth on the inside, where they touch the skin ; it is kept in place by two prongs, movable or permanent, with conical points turned inward, which keep the buckle, if it may be so called, in place and prevent its slipping backward from the limb ; the posterior ring is complete behind, the anterior nearly so, but the ornament is partially open in front ; with the movable points, it may be usually removed, but it must be an instrument of torture which only the fashion could render endurable. It will thus be seen that behind and on the sides of the leg is a double series of brass rings, rough and heavy, often eating into the flesh, but the shin is free in front though severely pinched on the sides. The small specimen, represented upon the foot in FIGURE 6, shows that children wore the same ornament. The illustrations alone can show the peculiarities and the method of wearing these singular leg ornaments.

FIGURE 8 is a toe ring weighing 1 oz., carrying a double bell. This is used in dancing, of which the people

are extremely fond ; they delight to hear the tinkling of these bells, and the clicking of their anklets and buckles as they strike their legs together in the Santhal cracovienne.

They wear rings at the elbows, ear-rings and nose-rings, even the children ; they also use a kind of castanet, with which they mark the time in their graceful, exact evolutions. The women even indulge in the practice of dyeing their eyebrows, and the men often bang their hair. In fact, there is hardly a fashion of modern male or female ornamentation, which is not borrowed from and a relic of barbarism.

Life must be pleasant to the Santhal, cultivating his land, dancing to the music of his flute, carousing at the harvest festivals, and going in convivial parties to the hunt ; in the last they are ardent and skilful, though they generally avoid the tiger and the bear. Their native weapons are the bow, the spear, and the battle-axe, the last of which they throw with great force and accuracy. They make excellent police for the jungle districts, as they are proof against malaria.

In the disposal of the dead, they in some respects resemble the Hindoos ; the body is burned on a pyre, and two pieces of bone from it are taken to the Damuda, their sacred river, to be carried out to the "great ocean," and there be gathered to those of his fathers ; from these bones is to be made the new body, in which the deceased dwells, and continues life in the other world.

Once a year they collect in vast numbers for a hunt of extermination of wild beasts ; they hunt by day, and at night hold their feasts and councils. Every man, who can support himself, or, as they say, who can stand on his own legs, has the right to vote at their meetings.

According to Dr. Caldwell, the Indian populations have

been : 1. The *Kolarian* (or Kerwars) the earliest, who entered from the northeast the mountain region of Assam and Thibet ; 2. The *Dravidian*, who came from the northwest, from the direction of Afghanistan, across the Indus, who went to the extreme south, either voluntarily or driven by other tribes following the same course ; 3. The *Scythian*, non Aryan race, from the region of the Black Sea, who formed with the Sanskrit the mongrel Prakrit dialect of North India ; 4. The *Aryan* invaders or Hindoos. These races probably fought against each other, until the Aryans conquered, driving the Kolarians to the mountains where they maintained their independence, the Dravidians submitting and retiring southward. Both these races are doubtless offshoots of the pro-Malay stock, from which Mongolians, Malays, and many so-called Aryans are supposed to be descended in remote prehistoric times. According to their sacred Rigveda, the Aryans are believed to have come in about 1500 B. C., from Persia, and after a long and severe struggle to have vanquished the Kharwars or Kolarians. In the north, then, were the Kolarians or Mundas, to which the Santhals belong, avoiding extermination by retreating to the hilly regions to the northeast, on the southern flank of the Himalayas ; the Dravidians were regarded by the Aryans, at least five centuries before Christ, as the aborigines of South India. To these belong the Tamils or Tamulians, the Klings, and the Cingalese, all of whom I have seen in Ceylon and Singapore. The Tamils are about 10,000,000, mostly in East Ceylon, great wanderers and excellent seamen, and from whom the name Coolie (*Kuli*, or *hire*) is derived—meaning a person who will work for hire. The Telingas or Klings are about 14,000,000, and are most common in East India, taller, fairer, and equally energetic ; both are more bearded and with better heads than the Mongolians,

and come nearer to the Aryan races ; but Chinese admixture has greatly modified the lower classes of all these races, so that it is difficult to find one of pure blood.

It is impossible to determine how much the Dravidian element enters into many of the Kolarian tribes ; it is certain that many of the Hinduized aborigines are Dravidian, characterized by speaking the Tamil language, and numbering over a million in Bengal alone ; they also have in their language Sanskrit elements, especially among the more civilized.

I will not discuss the point whether the so-called Dravidians have any Mongolian admixtures or characteristics, as I think the whole race in question must be dated back as very ancient branches of a pro-Malay common stock. It is probable that, after the separation of what afterwards became what is styled the Mongolian stock, in the mountains to the north, these races mingled together and it is certain that in modern times they have been mixed with the Aryan Hindoos.

I recognized a national resemblance between the degenerated Santhals, both physically and mentally, and the present inhabitants of eastern and southern India, and Ceylon, and by their wanderings, in Singapore. In the last named place I saw the Telingas or Klings, who, though dark as negroes, have very fine heads and bearded faces, non-negroid black hair, flashing eyes and pleasing features ; but the body and limbs are poorly developed, as they prefer house service to hard out-door work. The men often wear ear-rings and bracelets, and are savagely handsome fellows, but good-natured and industrious. The women have a more barbaric look, wearing armlets and anklets, jewelry in the lobe and top of the ears, ornaments in each wing of the nose, and often a ring in the middle cartilage of considerable size ; you see among them many

handsome faces, and the fore-arms are often elaborately tattooed. The children are uncommonly pretty and both sexes go nearly naked until the age of five or six years; the men have contracted the sedateness of the continental Malay, among whom they live, and have not the jollity of their Ceylon and Madras brethren and the Polynesians.

The Ceylonese men carry their hair straight back from the forehead, put up behind in a knot like a woman's and kept in place by a tortoise-shell comb; it is sometimes allowed to hang down the shoulders. When covered at all, the head bears a small turban or many colored straw hat. The dress is loose and flowing, as in the Santhal's; the features are handsome. They are considered as of less mixed stock than the Tamils or Tamulians, and are very dark. The children are singularly pretty, and the sexes hard to distinguish even by the dress, until the beard begins to grow. The Tamil boatmen are tall and well-formed, and carefully shave their scalps and faces. The Coolies dress simply in a waist cloth, but the better classes wear folds of white linen or cotton, rolled around the body and carried over the left shoulder leaving the right arm free. Females of all ages wear bracelets and anklets of silver or other metal, but not the nose and ear ornaments of the Klings. They chew betel, which the Santhals do not. These so-called Dravidians have adopted many of the customs and ideas of their Mahomedan and Hindoo conquerors, while the Kolarians, and the Santhals especially, driven to the mountains, and practically independent, have preserved their traditional characteristics, and may be cited as the best specimens of the pre-Aryan, probably aboriginal, inhabitants of India, and very likely as coming the nearest, of any tribes now living, with the Juangs, to the pro-Malay stock.

I am of opinion that sufficient attention has not been

given to this pro-Malay type of man, the probable ancestor of most if not all, the nations of Asia, Europe, Africa and Oceanica, and the derived races in the New World. Color of skin and character of hair I regard as simply a matter of climate, acting not during centuries, but many thousands of years ; I believe that the first man had a dark skin, and that crisped hair is an evidence of great antiquity in a *tropical* heat, and not of a distinct origin. Why did such an acute observer as Dr. Charles Pickering regard the Japanese, the old Californians, the natives of Mexico and the isthmus, and some of the American Indians (Cherokees and Chippewas) as Malays? I have noticed the same in Mexico (Acapulco, Manzanillo) and in Central America. A consideration of these pro-Malay races, and of the changes in the relations of land and water, which there are good reasons for believing have occurred during this age of man, would explain, or at least throw light upon, the early migrations of man, and show how unsatisfactory are all classifications of the human races which take into account only those known to history ; the border land between tradition and history is well worth examination. In forming an opinion on the aboriginal tribes of India, in the neighborhood of one of the cradles of our species, we must go back in time many thousand years before the Aryan occupation, and before *this* branch, or *Mongolian*, or *Malay*, existed as such ; and I feel inclined to return to the old idea that all the nations of men have originated from a very few pairs, if not a single one. Whether created, or evolved from an anthropoid ape, matters not for this hypothesis, and both origins require a first appearance in a climate at least sub-tropical, where clothing for protection would be unnecessary—where food grew spontaneously—and where caves, either natural or artificial could be found or made in a soft and stratified, and not primary, geological for-

mation. I believe in the existence of man for tens of thousands of years, and that he first appeared in the neighborhood of Central Hindostan, on the southern slopes of the Himalayas, or in some island in the Arabian gulf or bay of Bengal, the Lemuria of Selater now sunk beneath the sea—in other words, in or very near the latitude and longitude indicated by many old traditions; that, if he appeared by evolution, the missing links are many, for the gap is very great, between what we know of the highest apes and the lowest man of whom we have any evidence. I suppose that, whether created or evolved, most would admit that primitive man was comparatively low in his mental and moral development; though of course the theological assumption is that he was created “a little lower than the angels,” which is perhaps the only one admissible on the creation theory. We know, in fact, that man’s condition has not always been one of growth; history shows many remarkable and indisputable cases of degradation; the Santals are a case in point. I will only hint at the belief that the mysteries of Peru, Central America, Mexico, and the mound-builders (perhaps), of the pyramids of Egypt, the temples of India, and the gigantic structures of Easter island and the Ladrões, point to immensely distant periods of time, and migrations rendered possible, and now apparently impossible or improbable, by great geographical changes in the earth’s surface; and that these archaeological secrets will never be revealed to him who studies solely man as he exists actually or in history, or by any marks he has left behind him, except language.

REPTILES AND BATRACHIANS FROM TEXAS AND MEXICO.

BY SAMUEL GARMAN.

THE collection from which this notice is taken was made several years ago by Dr. Edward Palmer for the Museum of Comparative Zoölogy. It contained twenty snakes, nineteen lizards, three turtles, thirteen frogs and toads and one salamander; in all, fifty-six species, represented by several hundred specimens. Especial interest attaches to it, because of the pains taken by the doctor to secure series of young and old, and the care with which he fixed the localities and the dates of capture. The scarcity of new species or varieties is accounted for by the fact that the same regions had been visited by the collectors of the Mexican Boundary Survey. Yet, although the ground had been so well traversed before this collection was made, it contains a number of forms not previously included in recent faunal lists of their respective localities.

CROTALUS ATROX *Baird & Girard*, 1853.

On a specimen from San Pedro, Mex., there are twenty-five rows of dorsals, one hundred and eighty-one ventrals, twenty-six subcaudals, thirty-seven transverse blotches on the back, and six bands of black around the tail. Another from Monclova, Mex., has twenty-five rows of dorsals, one hundred and seventy-eight ventrals, twenty-five subcaudals, thirty-two blotches on the back and five bands of black on the tail. The following notes on the

rattle and rate of growth are made from this species and also from others not found in the Palmer collection.

At birth, the rattle is represented by a single button, the basal piece. As the animal grows, this button is displaced by another which has grown within it and crowded it back, but which it now, being the first ring of the rattle, clasps rather loosely. The new button is crowded back in similar manner by its successor, and so on, each segment of the rattle becoming a ring after a period of service as a button. The ring which was the first button is the smallest and is easily recognized by its shape; not having been formed inside another, its angles and curves are much less abrupt. Until a certain stage is passed, each ring is smaller than that formed immediately after it. Usually, from the first ring to the seventh, the rattle, as a whole, is tapering; from the seventh, the rings are more equal, and the edges of the organ are nearly or quite parallel. If the rattle is much tapered, it is evident that the snake to which it belongs is comparatively young; on the other hand, if none but nearly equal rings are present, we can only say the taper portion has been lost and that the age of the snake includes sufficient time to form both the taper and the parallel portions, with a possible addition for lost rings of the latter. During the time of most rapid growth the rings are most unequal; those formed afterward make up the parallels. Consequently, the separation of the species, as advocated by some, into two groups, one of which shall contain those with tapering, and the other those with parallelogrammic rattles is an impossible one. Of *C. atrox*, the young are less than ten inches in length at the time of extrusion. Specimens on which the first ring has appeared are about double the length. Others with a larger number of rings prove that this rapid increase is not kept up, but that year after year the rate

decreases gradually, until in old snakes the addition during the time of producing a ring is hardly perceptible. In the time from the completion of the fifth ring to that of the sixth only a couple of inches were added on our examples.

My means of determining the time required in the production of a ring have not been wholly satisfactory. Living individuals certainly acquired a ring at the time of sloughing in the spring. Of about seventy alcoholic specimens collected between May and September each of three, secured late in the season, shows a new button well under way; proving that at least in cases a ring is added in the fall. The general opinion is that only one ring is grown each year. To take one per year as the ordinary rate gives *C. atrox*, from Dr. Palmer's specimens, about seven years in which to finish the strongly tapered portion of the rattle, becoming full grown in a total length of not far from three feet six inches. An individual four feet in length has seven of the equal rings, having lost all the tapering; this, at a ring per year, would indicate an age of fourteen years or more. Other snakes slough both in spring and fall. The few observations I have been able to make at the proper seasons go to show the rattlesnakes possessed of the same habit. If this be so and a ring is gained at each sloughing, as seems to be the case, the number of the years of the snake will be but half as large as that of the rings. The male in this and the following species is generally the smaller for the same number of rings.

In connection with the foregoing a number of specimens of each of several other species have been examined, with a view of determining how much stress may be placed on the conclusions suggested above. On account of the great amount of individual variation from sex, locality, food, etc., it is necessary throughout to speak in terms of averages.

Crotalus confluentus Say, 1823.

In complete rattles the taper portion includes no more than seven rings, and the average size of snakes reaching this number is less than three feet, showing the species to be smaller than the preceding. A fourteen-inch specimen has one ring and the button; a twenty-three inch, taken up in the mountains, has seven rattles, of which three show comparatively little taper, possibly evidence of short allowances. Fourteen specimens.

Crotalus horridus Linn., 1758.

The pronounced taper appears to include the eighth ring in a couple of cases. On very large specimens with long series of rings it is quite evident there is taper in what from a small number of the rings would be called parallel; this is seen plainly on measuring rings at a distance from each other. Individuals with complete series of seven rings all tapering measure from two feet eight inches to three feet three inches. One, two feet ten inches long, having lost some rings, still has five of the taper and five of the parallel. Another, four feet four inches in length, has lost all but seven of the parallels. The first ring and the button appear on one of nineteen inches. Eighteen specimens.

Crotalus adamanteus Beauv., 1799.

The largest on which we find all the rings taper is three feet seven and a half inches in length. On one of three feet four inches and another of four feet eleven inches the rings form parallels. Four specimens, rattles incomplete.

Crotalus durissus Linn., 1758.

A seventeen inch specimen has not yet grown a ring; a three feet nine inch has nine rings and the button, seven tapering, the seventh to the button parallel; a four feet one inch has seven rings and a button, the taper apparently

extending to the eighth ring; and a four feet six inch has eleven rings and a button, seven rings in the tapering portion.

Crotalus lucifer B. & G., 1852.

On a two feet eight inch individual there are five rings in the parallel and three in the taper part of the broken rattle.

Crotalus exsul Garm., 1883.

A twenty-two inch specimen has eight rings tapering and from the eighth to the twelfth in the parallel. In this case the first was nearly as large as the sixth and the taper is comparatively slight.

Sistrurus catenatus Raf. ; Garm. Massasauga.

Young, at birth, measure eight and a half inches. Females reach the seventh ring, or finish the tapering part of the rattle, and become "full grown," at a trifle more than two feet in length, the males at less. A two feet ten inch specimen appears to have reached full size with the sixth ring; the sixth, seventh and eighth showing no taper. Thirteen specimens.

Sistrurus miliarius Linn. ; Garm. Ground Rattler.

A young one, how long at birth not known, with only a button, measures six and a half inches. The average size of full grown is rather less than seventeen inches. Sexual maturity is sometimes reached before the tapering series is completed. A gravid female with three equal rings and a button had a length of only sixteen inches. Twelve specimens.

CROTALUS MOLOSSUS B. & G., 1853.

From the mountains of Alvarez, near San Luis Potosi, Mex.

Dorsal rows twenty-five; ventrals one hundred and seventy-three; subcaudals twenty-three. Crown shields rugose; two triangular internasals; two prefrontals; four frontals, forming a quadrangle, with a small scale in the middle. About thirty-two lozenge-shaped blotches on the back, each with yellow margins a single scale in width.

CROTALUS PALMERI var. n.

Monclova, Mexico.

Dorsal rows twenty-three; ventrals one hundred and sixty-four; subcaudals twenty-four. Snout moderately broad; crown flat; two internasals; prefrontals in two transverse series, anterior of five and posterior of four scales; frontals small, smooth; supraciliaries prominent laterally; two anteorbitals, separated from the nasal by two scales; postorbitals three; suborbitals two, posterior separated from the labial by one scale, anterior in contact with the fourth or fourth and fifth labials; labials twelve; lower labials ten; pit surrounded by three scales.

The general appearance of the scales is as if they had been polished, on head and body; the keels are low, and are present on all except the outer row of each side. On the back the color is bluish grey. With the lens the scales are shown to be thickly puncticulate with darker. There are no lines, spots or dots on head or neck. Farther back a series of dark spots, of a couple of scales each, is faintly visible on the outer two rows of the flank; the spots gradually become darker until in the posterior half or more of the length they are black. Toward and on the tail the spot lies at the extremity of a faintly defined transverse band. Along the lower part of the side there are evidences of a reddish tint in life. The belly is yellow, slightly clouded or mottled with brownish.

The specimen is only two feet six inches in total length;

in the rattle there are nine nearly equal rings, some having been lost. From this it is evident the snake was full grown and belonged to a small species.

This form is closely allied to *C. tigris* Kenn., in which it is placed as a variety.

SIBON SEPTENTRIONALE *Kenn., sp.*, 1859.

San Luis Potosi, Mexico.

Dorsal rows twenty-five; ventrals two hundred and seven; anal bifid; subcaudals seventy-two pairs; white transverse bands twenty-six on body, ten on tail; total length nine and seven-eighths inches; tail two.

REGINA MESOMELANA *Jan*, 1863.

San Luis Potosi, Mexico.

The dorsal rows are nineteen in each case; ventrals one hundred and forty-nine, one hundred and fifty-five, one hundred and fifty-nine; subcaudals, in the only one entire, sixty-two pairs. On one the lower anteorbital is fused with the loreal on both sides of the head. One has the outer two and a half rows of lighter color; others have a light line on the second and third rows and below it a brown one on the first. The median line of olive brown on the belly varies greatly in width.

EUTÆNIA PROXIMA *Say; B. & G.*

Georgetown, Texas.

Dorsal rows nineteen; ventrals one hundred and seventy-one; subcaudals one hundred and five pairs; total length nine and seven-eighths inches, body seven.

EUTÆNIA MARCIANA *B. & G.*, 1853.

San Luis Potosi, Mexico.

Dorsal rows twenty-one; ventrals one hundred and fifty-

nine, one hundred and fifty-eight, one hundred and seventy-one; subcaudals sixty, sixty-nine, seventy-nine pairs.

San Antonio, Texas.

Rows twenty-one; ventrals one hundred and fifty-two; subcaudals seventy-two pairs.

EUTÆNIA CYRTOPSIS Kenn., 1860.

San Luis Potosi, Mexico.

Dorsals in nineteen rows; ventrals one hundred and sixty-one; subcaudals seventy-seven pairs. On one side the specimen has four postoculars, on the other three. Total length ten and seven-eighths inches, body eight and one-fourth.

SCOTOPHIS LINDHEIMERII B. & G. 1853.

Georgetown, Williamson Co., Texas.

Dorsals twenty-seven rows; ventrals two hundred and thirty-two; tail mutilated. About thirty transverse blotches of brownish on the back, in a reddish ground color; smaller alternating blotches on the outer rows; belly yellowish, clouded with brownish.

Corpus Christi, Mexico.

Rows twenty-seven; ventrals two hundred and twenty-eight; anal bifid; subcaudals eighty-two pairs; two scale pores, thirty transverse blotches on body, fourteen on tail; total length seventeen and one-fourth, tail three inches.

San Pedro, Mexico.

Rows twenty-seven; ventrals two hundred and eighteen; anal bifid; subcaudals eighty-one pairs; thirty-nine transverse bands on body, seventeen on tail.

COLUBER ORNATUS B. & G.

San Pedro, Mexico.

Dorsals in fifteen rows; ventrals two hundred and five; anal bifid; subcaudals one hundred and fifty-one pairs;

total length thirty and three-fourths inches, tail nine and three-fourths. The specimen has not the dark color of the original description ; it has the same squamation and similar disposition of lighter tints in place of the purple.

COLUBER TESTACEUS Say, 1823.

San Luis Potosi, Mexico.

Dorsal rows seventeen ; ventrals one hundred and ninety ; anal bifid ; subcaudals ninety-eight pairs. On the flanks there is a considerable amount of reddish color. Anteriorly, on the body, each scale has a brown streak along its centre ; posteriorly, they are yellowish in the middle and have brown bodies. The general appearance is greyish or yellowish grey.

DIADOPHIS DECORATUS Gthr. ; Cope.

Mountains of Alvarez, Mex.

Dorsal rows seventeen ; ventrals one hundred and fifty-seven ; anal bifid ; subcaudals one hundred and nine ; no scale pores ; total length nine and a half, tail three and one-fourth inches. The top of the head is dark. From the nostril through the eye and on the neck there is a white band narrowly edged with black. The lower of the edgings persists, as a narrow streak, extending to the end of the tail. On the median row of the back there is another streak of black, which becomes more distinct behind the neck in the lighter brownish of the body ; it also continues to the extremity. The lips are white, and have a few small spots of brown. The ventral scales along the entire body have at each end a small spot of black, making five vittæ in all. It is likely that in larger specimens the median vitta is lost in a darker ground.

DIADOPHIS TEXENSIS Kenn., 1860.

San Luis Potosi, Mex.

Dorsals in seventeen rows; ventrals two hundred and eleven; anal bifid; subcaudals seventy-one pairs.

RHINOCHILUS TESSELLATUS Garm., 1883.

Coahuila, Mex.

Scales in twenty-three rows; ventrals one-hundred and seventy-eight; subcaudals thirty-seven entire plus fourteen pairs.

OPHIBOLUS MULTISTRATUS Kenn., 1860.

San Luis Potosi, Mex.

Dorsal rows twenty-three; ventrals two-hundred; subcaudals fifty-five pairs; dark transverse bands sixty-two on body, seventeen on tail; total length thirty-one and five-eighths inches, tail five and one-eighth. Another specimen has ventrals one hundred and ninety-five; subcaudals fifty-six pairs; black bands sixty plus sixteen. Kennicott says of the type "the black rings extend but a short distance upon the abdominal scuta, leaving the abdomen destitute of blotches, though it is faintly and sparsely punctulated." Our specimens have more of the dark color on the belly.

TANTILLA CORONATA B. & G., 1853.

San Luis Potosi, Mex.

Dorsal rows fifteen; ventrals one hundred and fifty-four; anal bifid; subcaudals sixty-three pairs. The type specimen from Mississippi had ventrals one hundred and forty-three, and subcaudals thirty-five pairs. The specimens described by Dumeril and Bocourt, from Mexico, have one hundred and seventy-two to one hundred and seventy-seven ventrals. One from Beaufort, North Carolina, has ventrals one hundred and thirty-three, anal bifid, and fifty-one pairs of subcaudals.

GEOPHIS LATIFRONTALIS Garm., 1883.

Fifty miles south of San Luis Potosi, Mex.

Dorsal rows seventeen; ventrals one hundred and seventy-nine; anal entire; subcaudals thirty-two pairs.

STENOSTOMA MYOPICUM Garm., 1883.

Tampico, Mex.

STENOSTOMA TENUICULUM Garm., 1883.

San Luis Potosi, Mex.

STENOSTOMA RUBELLUM Garm., 1883.

Uvalde, Tex.

EUMECES LYNXE Wiegman.; Boc.

Mountains of Alvarez, Mex.

LYGOSOMA LATERALE Say; D. & B.

Goliad, Goliad Co., Tex.

CNEMIDOPHORUS GULARIS B. & G., 1852.

San Antonio, Tex.

Pores seventeen plus sixteen; thirty-five transverse series of scales from gular fold to pores.

Laredo.

Pores nineteen plus nineteen; thirty-one series from fold to pores.

San Luis Potosi, Mex.

Pores eighteen plus nineteen; transverse series of scales from fold to pores thirty-two.

GERRHONOTUS IMBRICATUS Wiegman., 1828.

City of Mexico.

There is a brownish line between the mesial keels of

the back; the sides of face and neck are sprinkled with white.

San Luis Potosi, Mexico.

On these the back is sprinkled with spots of white, less than a scale in size.

GERRHONOTUS CÆRULEUS *Wieg.*, 1828.

San Luis Potosi, Mex.

PHRYNOSOMA CORNUTUM *Harl.*; *Gray*.

Monclova, Mex.; San Pedro, Mex.; San Antonio, Tex.

The largest specimen has a length of six inches, body four and an eighth; greatest width two and three-fourths inches.

PHRYNOSOMA ORBICULARE *Wieg.*, 1828.

City of Mexico; San Luis Potosi, Mex.; Sutherland Springs, Tex.

The femoral pores on a dozen specimens range in number from eleven to eighteen on a side.

PHRYNOSOMA MODESTUM *Girard*, 1852.

San Pedro, Parras, Saltillo and Monclova, Mex.

On nine specimens the number of femoral pores ranges from nine to seventeen on a side. The series make a turn backward as they meet in the middle, instead of an angle directed forward as in the preceding.

HOLBROOKIA MACULATA *Girard*, 1851.

From San Luis Potosi and Concordia, Mex.

Compared with others from Dakota these specimens are less uniform in color. The black spots on the back are more distinct as also the white at their hinder borders. The black marks at the side of the abdomen are more intense and extend farther under the belly. The northern spec-

imens have a more bleached or faded appearance. The lowest number of femoral pores on a side is eleven, the highest fourteen.

HOLBROOKIA TEXANA *Trosch.*; *B. & G.*

From Parras, Monclova and Saltillo, Mex.

The femoral pores number from sixteen to seventeen on each side.

HOLBROOKIA PROPINQUA *B. & G.*, 1852.

Guaymas.

On four specimens the number of pores on a side varies from eleven to fourteen. This species and those of *Callisaurus* and *Uta* do not belong to Dr. Palmer's collection.

The longitudinal fold or groove immediately behind the symphysis under the chin of the *Ophidia* is apparently duplicated in the species of *Holbrookia*, *Callisaurus*, *Uta*, and, probably, of *Uma*. That this peculiarity is accompanied by ability to enlarge the mouth opening by means of separation of the branches of the lower jaw at their junction is hardly possible. The rigid alcoholic specimens at hand are not the best for deciding the question. Yet it is certain that, in comparison with other lizards, there is a decided lack of firmness and solidity in the symphysial attachment which is very suggestive of its elasticity and flexibility in the earlier stages of the species. The presence of the fold seems to characterize a group of the *Iguanidae* of close affinities in other respects.

CALLISAURUS DRACONOIDES *Blainv.*, 1835.

Cape St. Lucas, Lower Cal.; Guaymas.

Pores varying from fourteen to sixteen on a side.

UTA STANSBURIANA *B. & G.*, 1852.

San Diego, Cal.

Pores fifteen plus fourteen.

UTA ORNATA *B. & G.*, 1852.

Guaymas; San Francisco, Cal.

Pores varying in number from ten to thirteen on each side.

CROTAPHYTUS COLLARIS *Say; Holbr.*

Monclova, Mex.

The exterior of the two oblique bands on the neck is broken into four or five spots. On the body behind the black collar there are six transverse series of black spots, the median pair of each being larger and more intense in color. Lighter spaces separate the spots and form cross-bands, as in specimens from Arkansas.

SCELOPORUS TORQUATUS *Wieg.*, 1828.

Concordia, near Saltillo, Mexico.

SCELOPORUS POINSETTII *B. & G.*, 1852.

Monclova and San Luis Potosi, Mexico.

SCELOPORUS SPINOSUS *Wieg.*, 1828.

San Antonio, Texas; San Pedro, Mexico.

Dr. Boulenger states, 1885, that this species "appears to be completely linked with *S. undulatus*" through the variety *S. clarkii* B. & G.

SCELOPORUS SCALARIS *Wieg.*, 1828.

Concordia, thirty miles north of Saltillo, Mexico; City of Mexico.

SCELOPORUS GRAMMICUS *Wieg.*, 1828.

San Luis Potosi, Mexico.

SCELOPORUS MICROLEPIDOTUS *Wieg.*, 1834.

City of Mexico.

SCELOPORUS COUCHII Baird, 1858.

Monclova, Mexico.

Head shields smooth; a series of broadly dilated transverse supraoculars; two canthal scales; occipital large, about as broad as long; parietals small, three on each side; two frontoparietals, in contact behind the frontal; anterior border of the ear with four or five pointed slightly enlarged scales. Dorsal scales as large as ventrals, keeled, blunt-angled or rounded on the posterior margin, longitudinal series gradually converging toward the vertebral; near eighty series from occipital to base of tail; about twenty scales correspond in length to the shielded part of the head; lateral scales small, very small or granular in the posterior third of the flank, in front of the thigh, keeled, directed obliquely toward the back; ventral scales smooth, blunt or bicuspid; a series around the middle of the body includes about eighty scales. The adpressed hind limb, with the foot, reaches between the ear and the eye; tibia as long as the shielded part of the head; the distance from the base of the fifth toe to the extremity of the fourth is longer than from the end of the snout to the ear. Series of femoral pores thirteen to sixteen each, not meeting. The caudal scales are larger than the dorsals. Male with enlarged post-anal scales. Greenish olive above, with a series of irregular spots of black on each side of the middle of the back, and a lighter band at the upper edge of each flank. Below this light band a black one extends from the eye to the thigh, broken into spots anteriorly, becoming more distinct and broader as it nears the leg; below the dark band a lighter one runs from arm to leg on the lower edge of the flank. Chin and throat have transverse bands of dark and light color, bending backward toward the median line. A black blotch in front of the shoulder. Dark bands across arm and leg. Male with a blue dark-edged blotch on each side of the belly.

Originally described from Pesquiera Grande, and New Leon, Mexico. The lack of details in the note by Professor Baird furnishes a reason for those given above.

EUBLEPHARIS VARIEGATUS Baird; Blgr.

Monclova, Mexico.

CINOSTERNUM HIRTIPES Wagl., 1830.

San Luis Potosi, Mexico.

EMYS ORNATA Gray, 1831.

San Pedro, Chihuahua, Mexico.

Three young specimens in the collection differ somewhat from the typical *E. ornata*. They have a rounded spot of yellow at the upper hinder margin of the orbit; behind this a short distance there is a broad subelliptical spot of the same color that is not connected with the yellow spot in front, or the yellow streak behind it. In this position *E. ornata* has a continuous longitudinal band. On the lower jaw, a little in front of the angle of the mouth, these specimens have an elongate spot with rounded extremities, also disconnected. The median band under the chin continues backward without a break.

A fourth specimen, however, is unlike the preceding in that the large spot, on one side of the head, is connected with both the small one behind the eye and the streak on the neck. On the other side of the head the large spot is connected with the streak but not with the spot behind the orbit, though extending a sharp angle toward it. This specimen agrees, on one side, with *E. ornata* as figured by Dr. Günther in Biol. Cent. Amer. Rept., pl. 1.

ASPIDONECTES EMORYI Agassiz, 1857.

San Antonio, Texas.

RANA MONTEZUMÆ Baird, 1855.

City of Mexico.

The specimens from this locality show a great deal of individual variation; it ranges from those in which a light ground color is marked with numerous spots of brown to those on which the ground is so dark brown the spots are invisible.

RANA BERLANDIERI Baird, 1858.

Monclova, San Pedro, and San Luis Potosi, Mexico.

But one of the lot has the foot webbed as figured by Baird, Mex. Bound., pl. 36, fig. 10. Commonly the membranes do not extend nearly so far toward the end of the longest toe. Whether the more complete web is a local peculiarity can only be determined by more specimens.

The Monclova representatives of this variety of *R. virescens* Kalm, 1761 (*R. halecina* Schreb., 1782, in synonym.), are of an ashy color, with the central portions of the spots much faded.

ENGYSTOMA CAROLINENSE Holbr., 1836.

Corpus Christi, Mexico; Goliad, Goliad Co., Tex.

These types have the single tarsal tubercle; the snout is moderately long; the color is more uniform than in those from Carolina; the longitudinal bands are absent, and there are a few scattered spots of black on back and top of legs.

PALUDICOLA NITIDA Pet.; Blgr.

Sierra de San Miguelito, nine leagues south of San Luis Potosi.

BUFO VALLICEPS Wiegman, 1833.

Corpus Christi and Monclova, Mexico; San Antonio, Texas.

Adults from Monclova are without the dark mottling beneath. The young have an extensive patch of brownish along the median line, from the throat to the posterior

portion of the abdomen; there is a light band from one supraciliary to the other, bending back in the middle; a double series of small spots of brown extends along the middle of the back from the occiput: crown flat, without indications of ridges or concavity; paratoids rounded, a series of prominent warts is continued back from the lower margin of the gland. Those from San Antonio are much darker, above and below.

BUFO COGNATUS Say, 1823.

San Luis Potosi; nine leagues south of San Luis Potosi; mountains of Alvarez.

The spots are smaller than on those from Kansas. The frontal ridges approach each other closely between the anterior ends of the orbits; from this point to the end of the snout the ridges are parallel with a very narrow groove between them. On *B. lentiginosus* and *B. americanus* this rostral groove widens toward the frontal region.

BUFO SPECIOSUS Girard, 1854.

San Pedro, Mexico.

Heretofore this toad has been placed in *B. compactilis*, a warrant for which we do not find in comparison of adult examples. While in small- to medium-sized the bony ridges of the crown are indistinct or low, on large ones they become moderately prominent. On both young and old the interorbital space is concave, and between the forward extremities of the upper eyelid there is a pair of prominences, more or less coalescing to form a transverse ridge. The supraorbital ridge meets the postorbital at a very open angle, and from the junction a short parietal ridge passes backward (as figured in pl. 40, fig. 7, Mex. Bound. Surv.). In the average the spots are larger than those of *B. com-*

pactilis, the interspaces more distinct, the general appearance smoother and the ground color lighter. A male has a single opening to the gular sac, on the left side.

There is not enough in the description of *B. dipternus*, from Montana, to separate it from half-grown *B. speciosus*.

BUFO COMPACTILIS *Wiegman*, 1833.

Monclova and Corpus Christi, Mex.

Readily distinguished from the preceding by the flat crown, the lack of the ridges, the rougher, more warty skin and the darker ground color.

BUFO PUNCTATUS *B. & G.*, 1852.

Monclova; nine leagues south of San Luis Potosi; Sierra Nola, Tamaulipas, Mex.

On the adult there is a slight supraorbital ridge and a shallow concavity on the broad crown. The preorbital and the postorbital ridges are quite prominent; the labial border is much expanded at the angle of the mouth; the black dots persist on the ventral surfaces.

BUFO DEBILIS *Girard*, 1854.

San Antonio, Tex.

Young specimens bear some resemblance to those of *B. punctatus*. The paratoids are longer. Individuals of about three-quarters of an inch in length usually have a single dark spot under each shoulder (*B. insidiosus* Girard) otherwise the lower surface is uniform yellowish.

ACRIS CREPITANS *Baird*, 1854.

Uvalde, Sutherland Springs, and San Antonio, Tex.

HYLA EXIMIA *Baird*, 1854.

Mountains of Alvarez and City of Mexico.

SCAPHIOPUS COUCHII Baird, 1854.

Monclova, Savineto, San Luis Potosi, and nine leagues south of San Luis Potosi.

AMBLYSTOMA MEXICANUM Shaw; Cope.

The colors vary from very light with brown spots to dark brown. This species may be distinguished from *A. mavortium*, in the same stages, by the slenderness of the band of palatine teeth. Most often, in specimens half grown or more, these teeth form a single series, rarely more, a condition only reached by *mavortium* on losing the gills. The multitude of small black spots also aids in characterizing *A. mexicanum*; the other is more likely to be nearly or entirely without spots on the belly. The palatine teeth of the larval *A. tigrinum* are like those of *A. mavortium*, but the latter appears to remain longer or become larger in the larval stages, often becoming sexually mature without transforming.

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CONTENTS.

Field Meeting at Montserrat, September 7, 1887,	1
Origin of name, Brimble, 3; of name, Montserrat, 5; of name, Beverly, 6; remarks of Robert S. Rantoul, 24; of John H. Sears, 25; of John Robinson, 27; of F. A. Ober, 27; file of letters exhibited by J. D. Tuck, 28; remarks of John I. Baker, 34; of Nath'l A. Horton, 35.	
Field Meeting at Bradford, September 16, 1887,	36
Remarks of the President, 37; of Robert S. Rantoul, 37; of Dr. George Cogswell, 37; of George D. Phippen, 38; of Dr. William Cogswell, 41; of Abner C. Goodell, jr., 41; of Gen. William Cogswell, 43; of I. N. Carleton, 43.	
Adjourned Annual Meeting, October 3, 1887,	45
By-Laws, 45.	
Honorary and Corresponding Members,	49
Letters of Acceptance, 50.	
Forefathers' Day,	55
An Andean Medal, by Samuel Garman,	57
An Annotated Catalogue of the Mollusca of Iowa, by Charles R. Keyes,	61
Two Naval Songs,	84
The Batrachia of Kalm's "En Resa til Norra America," by Samuel Garman,	90
Reptiles and Batrachians from the Caymans and from the Bahamas, collected by C. J. Maynard, by Samuel Garman,	101
On an Eel from the Marshall Islands, by Samuel Garman,	114
Annual Meeting, Monday, May 21, 1888,	117
Officers elected, 118; retrospect of the year, 118; field meetings, 119; meetings, 120; library, 123; museum, 135; rose exhibition, 136; treasurer's report, 137; Daland House fund, 138; donors to Daland House fund, 141; members deceased, 144.	

1. The first part of the paper discusses the general principles of the theory of the atom, and the second part discusses the application of these principles to the problem of the structure of the atom.

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FIELD MEETING AT MONTSERRAT.

On the seventh day of September last, after many vexatious postponements due to threatening and forbidding weather, the second field day of the season occurred at Montserrat, upon the hospitable invitation of our enterprising townsman, Henry W. Peabody, Esq., who has within a decade acquired there and laid out for suburban residence a romantic tract of some two hundred acres. The locality proved to be accessible and attractive. The Naumkeag Street Railway Company provided barges from their Rantoul Street terminus at the Gloucester Railroad crossing, and the Boston & Maine Corporation stopped several trains each way at their new station at Montserrat for the accommodation of the Institute. This picturesque little station was erected in 1885 from designs by Mr. Arthur Rotch, a summer resident and eminent Boston architect. It owes its floral decorations to the good taste and public spirit of Mrs. William D. Pickman and a few other summer sojourners in the neighborhood, and the woodbines with which its columns as well as the rustic arbor which roofs over its mineral spring are festooned, to that of Mr. Peabody, whose hospitality to the Institute was most liberal.

Montserrat is a section of Beverly quite abreast of its neighbors in point of interest. Recent real estate operations and road-building movements have brought it into conspicuous notice. The new pipe road of the Beverly Water Works, graded in 1885, opens a delightful drive-way or ramble from the new station west of north to the foot of Wenham Lake, and the new route takes the pleasure seeker midway between the two reservoirs of Salem and of Beverly and close to each, from the top of both of which spread out before the eye, wonderful and quite dissimilar views of southern Essex. The Salem reservoir, resting on Chipman Hill¹ on the left side of the pipe road, is nearer Montserrat and Salem and commands a more varied view than that of Beverly. When filled to the twenty foot limit its water-surface stands at a height of one hundred and forty-two feet above mean high tide. Of course, the gravel walk about its top is several feet higher. The gates were kindly opened for the day by the courtesy of the Water Board of Salem. No high ground intervenes between this point and Salem to cut off a most picturesque and comprehensive view of the city, with a single exception probably the finest to be had. In its water front the highest point is near Powder House Hill on Mr. Peabody's purchase, a point at which the proprietor has erected a commanding observatory of open trestle-work rising from a base one hundred and twenty-six feet above mean high tide, and rearing its highest outlook some fifty feet higher; so there is little to intercept a sweeping view from Chipman Hill seaward or towards Salem, and the Beverly reservoir on Brimble Hill, though higher, has no better view in these directions.

The Beverly reservoir, on the right of the pipe road, is

¹ See Essex Inst. Historical Coll., Vol. VIII, p. 118; also Report of Transfer of Salem Water Works to the City Authorities, Nov. 16, 1869.

freely accessible both on foot and by carriage. It is nearer the lake than the former and rests on an elevation whose natural height was one hundred and seventy-four feet before the extensive earthwork which now surmounts it was placed there. So the gravel walk on the edge of this reservoir cannot vary much from two hundred feet above the sea level, an elevation some ten feet higher than that of Brown's Folly, the acknowledged highest natural point of land in southern Essex County. The view is fine.

The name "Brimble" or "Brimball" Hill, which has adhered to the eminence from the first, is a puzzle to the antiquaries. If we were at liberty to change a vowel and write it "Bramble," there would be little trouble to conjecture an origin. But the lexicographers furnish us with only one word which would seem to claim relationship with Brimble. "Brim" is defined as the "edge or rim of a fountain or of any body of water,—the border or upper edge of a bowl or other receptacle for liquids." Now that Brimble Hill is destined to sustain hereafter an artificial crater or goblet filled with sparkling Wenham water, the philologist of the future will doubtless find the analogy most tempting. But "Brimble" may have been a family name now utterly extinct, like so large a portion of the old Puritan names once most familiar in this county. Of this decadence the spot itself furnishes a perfect illustration. Just at the foot of Brimble Hill, where the new pipe road now cuts its way through what was to all appearance the "forest primeval" destroying some of the characteristic features of the spot, the careful observer could once trace out amongst tangled copse of brush and bramble, of spruce and oak, of hemlock and walnut, here and there a gnarled and moss-grown apple tree, and if, with curiosity piqued by so unexpected a "find," he should push his scrutiny still further, he would observe these ancient

trees, sometimes two, sometimes more of them, standing, not in clumps holding accidental relations with each other as though they were seedlings planted in the flight of birds, but in regular lines showing evidence of design in the planting, and proving clearly that here in the mazes of this tangled wildwood he had come upon the ruins of an orchard. Not long ago, if not indeed now, he would have had little pains to unearth some gray block of stone which had done duty as part of the rude masonry of well-curb or cellar wall or chimney corner, and would have convinced himself with ease before leaving this forsaken, solitary and elf-haunted spot that it had been, since the white man's day, a place of human habitation. And so it was. . The place is known by the oldest residents as "Aunt Coker's orchard," but who the Cokers were or where they went or whence they came, no memory remains. Cokers there were at the mouth of the Merrimac in 1651, and Coker Hundred is the name of one of the hamlets in Somersetshire whence came the names of Balch, Patch, Dodge and many another sturdy old colonial patronymic, but no Coker of this tribe can be traced to-day far or near, those bearing the name hereabouts at present in existence being later importations. Thus family names die out, even in this new country, through failure of issue male, from migration and from other causes.

Returning to the Montserrat station one finds another new drive-way facing southerly and veering off by Snake Hill through what was once "Cat swamp" and establishing a delightful communication with Mackerel Cove, a district settled as early as any part of Beverly and known by that name in Colonial Records as early as 1645. Between Mackerel Cove and River Head or Bass River side, the two earliest settlements of the present town, a homesick heifer is said to have laid out the first trail. Interesting traces of old disused ways, not much better than abandoned

cart-tracks, are still to be made out across this section, their firm stone fences, reared in some cases by the hands of negro slaves, still marking the ancient lines ; and doubtless, amongst these reminders of a venerable past, could be discovered the highway evolved from the first cowpath between River Head and Mackerel Cove across the plain at Montserrat.

A road bearing northerly from the station, passes the long-time home of Hawthorne's favorite sister, and leads by Bald Hill, Centreville and Beaver Pond to Wenham Neck. To the south, an old road winds away towards the old South Meeting House and Beverly Town. "Little Comfort," a name borrowed from an Exmoor Combe in Devon, England, is also near, and "Paradise" is not far away.

Montserrat is one of many sections, rather than villages, of the old town of Beverly. Its designation is thought to have been borrowed at an unknown date from one of the little volcanic islets of the lesser Antilles forming a group called the Leeward Islands, one of which bears the name of Montserrat and is about equally distant from Nevis, the birthplace of Alexander Hamilton,—from Antigua where Gov. Winthrop's son Samuel lived and died as deputy governor,—from Guadaloupe and other points with which we have had trade from the early days of the colony. It is not unlikely that some one or more of our hardy skip-pers who spent their summers in the perilous husbandry of Grand Menan and George's Banks and their winters in threading the tortuous mazes of the tropic seas to furnish with salt codfish the Catholic tables of the Caribbean Islanders and bring back from the Sugar Islands to our New England distilleries the juice of the cane to feed "the worm that dieth not and the fire that is not quenched," may have resided in this part of Beverly. For it may well have

been settled soon after Woodbury and Brackenbury planted about Mackerel Cove and began to push their explorations on this line towards the "great pond side." Be this as it may, there was trade very early between Beverly and the Sugar Islands of the Antilles, and one of these had been discovered by the great Columbus in 1493 and by him named Montserrat. The rocky, towering, jagged face it shows to the voyager from the east prompted him to bestow upon it the name of a great, strongly-fortified, serrated or saw-toothed crag near Barcelona, familiar enough to every Mediterranean sailor,—the *Mons Serratus* of the Roman voyager, the *Monté Serrado* of the Castilian friar,—abruptly towering four thousand feet and more out of a level plain,—wildly cleft at the hour of the crucifixion, so runs the legend, into pinnacle and precipice and crag and spire, a sort of natural cathedral of Milan, and crowned on one of its loftiest isolated peaks with a mediæval Benedictine Abbey where the imperial recluse, Charles V, spent the evening of his life,—now visited by eighty thousand pilgrims every year,—rich in magnificent altar plate and candlesticks and jewels and priestly vestments,—a great, monastic shrine of refuge dedicated to the Virgin whose little ebon image, hidden there from the Moors in the year 717, and miraculously saved, was in 1881 blessed and honored with a silver crown by Pope Leo XIII. The name Montserrat occurs also in Switzerland and perhaps in other mountain regions of Europe but under circumstances which make it almost impossible that the charming spot now under notice should have been indebted to either of these places for its romantic designation. The island of Montserrat had its earthquake in 1843, yet still produces the best and largest crops of lime fruit in the world.

But accept what solution we may of the riddle about the name of Montserrat, the case of the word "Beverly"

is another equally hard one. Upon the town seal, as indeed upon that used to-day by the "Ancient Corporation of the Borough of Beverley" in Yorkshire, England, appears the effigy of that industrious and sagacious rodent, the beaver, in approved recognition of his having given his name to both these places. But of this there is very considerable doubt. Indeed there is no pretence that any beavers are to be found near Yorkshire Beverley, to-day, nor does anybody fix a date when there were any there, and it is not a little significant that, in Queen Elizabeth's time, the municipal seal of the borough bore no beaver but, Yorkshire being a famous hunting country, a fox.

If our Essex County Beverly owes its name to the shire town and market borough of Yorkshire East-Riding in England, it is by no means an obligation to be ashamed of. It was the fortune of the writer, himself a native of Beverly, to teach the town school, a generation ago, in a busy manufacturing village of New England, and the magnate whom he met there, in the relation of "prudential committee man," proved to be a former "burgess of the antient borough of Beverley,"—a thrifty English weaver who had established in this section the manufacture of stockings. Some of the results of researches thus set on foot are here recorded.

Beverley in Yorkshire has a population of ten or twelve thousand souls, with an ancient market-place, a famous cattle market covering four acres. It is built mainly on a single street, more than a mile in length and terminating on the north in a very ancient gateway. It is connected by a canal for boats and barges, called Beverley Beck, with the river Hull a mile away, which, a few miles farther on, flows into the Humber. It was one of the "rotten boroughs" disfranchised by the act of 1870, before which date it claimed two seats in the House of Commons. But while part of the town is ruinously ancient, another part is new

and very well built, attractive and substantial. It is not lacking in life and spirit to-day. It has large manufactories of agricultural machinery and fire-arms, and its iron-works are amongst the most extensive in England. Tanning is, however, its greatest industry, and this with its breweries and malt kilns, its dealings in grain, lumber and coal, and other branches mentioned, keep its people busy and thriving. It paid no tax nor toll to any town in England. Camden, in 1586, mentions bone-lace amongst its industries.

But the monumental glory of the ancient borough is Beverley Minster. Here is its one majestic feature, a structure of romantic age, of grand proportions, of historic interest and of quite exceptional beauty. Here lie buried the Percys, for centuries the proudest family in England, Dukes of Northumberland, Earls of Beverley, under a marble mausoleum, one of the most magnificent in Europe. The great Percy had a burial here which cost a quarter of a million dollars and was attended by no less than fourteen thousand retainers. This Percy shrine dates from 1365. In 1188 the Minster was burned and restored. In 1323 it was ransacked with great plunder by Robert Bruce. It is three hundred and forty-four feet long and has a tower one hundred and ninety-eight feet high. It is in the finest perpendicular manner, and Sir Christopher Wren is reputed to have taken suggestions from it for the western front of Westminster Abbey. John, Archbishop of York, an instructor of the Venerable Bede, whose virtues and scholarship made him worthy to have so distinguished a pupil for his biographer, founded this church at Beverley, in 685, and died there in his own monastery, having renounced his bishopric and the world, in 721. Its greater rival, York Minster, is much more modern. Three centuries afterwards, in 1031, he was canonized by the Church of Rome as St. John de Beverley and had miracles in plenty attributed to him, and his remains and memory were later

treated with signal reverence by William the Conqueror. King Athelstan in 930 had greatly enlarged the church and consecrated it for a sanctuary where whoso, fleeing from his creditors or even suspected of a capital crime, could reach the "freed-stool," was safe from that moment. He also made Beverley the *Caput* or shire town of the East Riding. All this to propitiate the favor of heaven, when he was setting off to fight the Scots. The Abbot of Beverley, in July, 1478, christened, in this old minster, by the name of "Ursula Southiel," the famous Mother Ship-ton, and to him, in the fourth year of Henry VII, she confided one of her most startling predictions. And the nursery tale, which under the name of the "Babes in the Wood" has curdled the blood of infant innocence all these years, grew out of facts occurring in the family of an Esquire Somers at Beverley in 1703. So the old borough is not lacking either in history, mythology, tradition or present interest and importance.

This Yorkshire Beverley is one of the oldest settlements in England. The lately accepted derivation of the name, in any of its various forms, from the word Beaver will be seen to be of extremely doubtful authority, to say the least of it. In fact the place seems to have been designated by names which could have no reference to that creature, and which might well enough be variations of the word Beverley, for at least five centuries before any people using the word Beaver as the name of the King of Rodents inhabited the region of the Humber. A little detail will perhaps be pardonable in making this appear.

We first know the British Isles peopled with a rude, warlike, druidical, celtic stock of which the Irishman, the Welshman and the Scottish Highlander are the lingering remnants. Of their early language we know little, but naturally assimilate it in our conjectures with that of these

strongly marked modern representatives. Their coasts were invaded fifty-five years before the Christian era by Roman cohorts which soon pushed as far north as Yorkshire and planted at *Eboricum*, now York city, their most northerly and also their most important centre. Here, at this great military post, three Roman Emperors in successive centuries established their courts and dazzled with the splendors of their display the ruder fancy of their subject realm. Adrian, the first general of Imperial dignity to push so far north, had head-quarters for a while at York, A. D. 121. Here died in February, 211, the gouty old Emperor and General, Septimius Severus, while being carried about on a litter in an effort to conquer the Scots; and a century later, in July, 306, another Roman Emperor, Constantius, visiting the city on the same troublesome errand, attended by his more distinguished son who succeeded him as Constantine the Great, died at York also, and the obsequies and apotheosis of both were celebrated here with a magnificence quite beyond the power of language. Here, then, their famous military roads converged and from this point in all directions their wonderful towers and castles, still defying time and mocking at modern science, dominated hillside and glebe, far and wide, while the splendid intrenched camps which dotted the plains brought life and activity and civic arts to an insular and unpolished people. The two elements, British and Roman, lived together on such varying terms as they might until the Anglo-Saxon invasion, which may be placed, for our purposes, at the middle of the fifth century and which was followed by that of the Scandinavian Norsemen in the middle of the ninth century, and by that of William, the Norman Conqueror, about the middle of the eleventh century.

It is fair enough to say that since the invasion of the Anglo-Saxons, who profoundly impressed themselves upon

life and language in Great Britain, the Beaver has been known by his present English name or some combination of letters closely equivalent. *Beöfer*, *Büver*, *Boöver*, *Bæver*, are some of the forms by which our Saxon and Danish progenitors have designated what the Scandinavians like to call the "boss-master-builder,"—"erke-bygmeister." This was enough for the average etymologist. He made light of the fact that there are no beavers in the Hull river. They might have been there once, and when there they might have dammed the stream and made a lake of it, and these conjectures saved him further trouble. Beverley must be either Beaver-lake or *Boöver-elv*, the Danish for Beaver River, and there he rested.

There is every reason to think that, in connection with their extended operations about York, some twenty-five miles away, the Roman invaders established themselves on the Hull river at Beverley. The Itinerary of Antoninus completed before the Christian era (Theodore Parker's copy of it is in the Boston Public Library) indicates this and seems to show that the Roman name for the place was "*Petuaria*." Ptolemy, the Alexandrian, who wrote in Greek about the geography of these islands in the second century, spells it *Πετουαρία*, and the theory is that the name was derived from the familiar words for stone, *πέτρος*, *petrus*, and that within the limits of this camp or town four Roman milestones were brought near together from the crossing of the ways, and so the place was called "Cross Roads" or "The Milestones." The native Britons, the warriors of Boadicea and worshippers in Druid groves, called the place "*Pedwarllech*" and whether this be assumed as the original form which the Romans adopted and softened into *Petuaria*, or whether we conclude that Romans first settled *Petuaria* and named the place and rough British throats corrupted the smooth, mellifluous latin into "*Pedwarllech*" and later comers into "Beverley," no one familiar

with the laws of change which govern vocal sounds will have much doubt that the three words are identical. It will be remembered that the latin names for the Beaver were *Castor* and *Fiber*.

The forms of spelling assumed by this word "Beverley" in different periods are interesting and instructive. The British form "Pedwarllech" begins with P; but P and B are equivalent labials. Britain in Celtic was, according to Camden, "Prydhain." The letters the Saxon used are well represented by *Bewer-lega* or *Bewerlaga*, which have been variously modernized by Lingard, Camden and others as *Beöferlic*, *Bevrolac*, *Beverlaga*, *Baverlie*. Athelstan in conferring the charter, used *Beverlike*; William the Conqueror, in a proclamation extending his royal protection to the town, used *Beuerlie* and later the Domesday Book used *Bevrel*i and *Beverel*i, while the Tower of London Records contain chronicles of various dates, some from the old Beverley Minster itself, in which occur *Beverlay*, Anno 1387, *Beverlaye*, *Baverlay*, *Bewerley*, *Bevlay*, *Beveley* and others. It should also be noted that the ending "ley" is by no means rare in Yorkshire—witness *Otley*, *Keighley*, *Barnesley*, *Bingley*, *Ripley*, *Briarley*, *Branley* and the rest—and that by no possibility could so many towns in that section have derived their names from lakes or rivers; and further, that the spelling "ley," now uniform in England, has not always been so, but the name may be found, not many years back, spelled "Beverly" as it is now in New England. It is therefore probable that the Yorkshire *Bewerley* got its name from no Beaver lake or dam, and that the "*lacus sive locus castorum*" was a conceit of Alverardus the ancient sacristan of Beverley Minster who, finding the word "Beverlik" in his mediæval records, and being hard pressed for a Latin synonym, when he, as he tells us, "*de Anglico in Latinum transtulit*," in an unguarded moment gave his holy sanction to this ill-grounded guess. As well might

we conjecture our Essex County Beverly to be the namesake of Beaver Pond within its own borders. Both trace back to the Pedwarllech of the ancient Druids.

But a more interesting question connected with the ancient name is this: how came it to be appropriated to the parish on the Bass river or Cape Ann side of the Salem settlement? There has never been a pretence that any early settlers of our beautiful shore town came from the Yorkshire borough; on the contrary, most of them were from the Channel counties of the west of England and not only for old association's sake, but from the singularly like exposure of the new settlement on Massachusetts Bay, would the early settlers across the creek have naturally desired the name of some south of England hamlet in Devon, Dorset, Somerset or Hampshire. Not only so. It is matter of record that Roger Conant, the patriarch and most considerable personage of the Bass River movement, and the man above all others who had a right to feel that his inclination ought to be consulted, expressed his preference for the name of his native Budleigh, a hamlet looking out towards the south upon the British Channel just as Beverly looks out on Massachusetts Bay, and in this "simple desire and request" he was sustained by a very large portion of the male population of the place; yet his efforts failed and he does not conceal his chagrin at being denied, in his eightieth year, so natural a wish.

"Cape Ann Syde," Bass River Side," "River Head" or "Basse River Head" was occupied in 1628 for cutting thatch and tillage and "quickly after," says Brackenbury, "sundry houses are built." There was a ferry as early as Dec. 26, 1636, and William Dixey had charge of it from 1639 to 1645, and established a public house opposite the Northern landing. In 1649-50, the agitation for a separate house of worship began, and it resulted,

probably before August, 1654, in the building of one at the northwest corner of the burial ground, just in the rear of the present church. Thos. Lothrop, in 1656, contracted with John Norman of Manchester, for a parsonage "to be thirtie eight foote longe; 17 foote wide & a leuen foote studd, with three chimnies towe below and one in the chamber, for fortie five pounds," all to be finished for Mr. Jeremiah Hubberd, who was living in Thomas Lothrop's house, to dwell in by April or May, 1658. Bass River had previously entertained Jeremiah Hubberd's brother Joshua as a preacher, and in 1664 called Mr. John Hale who next year settled with them and occupied the parsonage. Lieut. Wm. Dixey and Humphrey Woodbury were a committee to attend to the "houseing for Mr. Hale's cattle," and Capt. Thomas Lothrop, Mr. Thorndike and Roger Conant were to levy a rate for Mr. Hale's maintenance.

In 1667 the parish was fairly set off from the Salem Church and in 1668 the town was incorporated as Beverly, after agitating and petitioning to that effect since 1659. The same names are prominent in these movements, leaving no doubt as to who were the leading men naturally expecting to be consulted in the naming of the town. John Woodbury had died in 1641. Roger Conant was an octogenarian, honored and beloved. Captain Lothrop, deputy, selectman, church elder, soldier, was in his prime, and so was William Dixey, who succeeded him as Captain on the death of the former at Bloody Brook in 1675. Dixey was one of three men chosen to resist Mason's claim, and in 1646 laid out under order of Court the highway from the ferry to Manchester. The first three petitioners for a separate church organization in 1667 were Roger Conant, Thomas Lothrop and Wm. Dixey.

In 1671, three years after the incorporation of Beverly,

Roger Conant presented a moving appeal to the General Court for a change in the name of the place, and did not attempt to disguise the chagrin he felt, that he "the first that had house in Salem" had no voice in the naming of the old or the new town. In this petition he was sustained by thirty-four citizens of the town, which, considering that the parish, when petitioning to be set off in 1667, had but seventy-three adult residents in all, must have been nearly the whole male population of the place; but neither the name of Thomas Lothrop nor of William Dixey is among the remonstrants against the name of Beverly.

Now the Beverly Meeting House, designed for church, school and town purposes, was probably built before the taking of Port Royal in 1654. It needed a bell, and it got its bell in a very singular way, and in this very way the parish also may have got the name of Beverly. A law-suit grew out of the possession of this historic bell and the Court records of 1679 throw curious side-lights upon the interesting question of the new town's christening.

Dixey's house, as we have seen, was near the ferry, and as late as "1st 11th mo. 1645, he is still "Ensign Wm. Dixie now fferyman." For years he was an innholder and his supposed location is on the high ground at the junction of what are now Cabot and Davis streets, where he was a very extensive landholder. At some time between the taking of Port Royal by Major General Sedgwick, Aug. 16, 1654, and his departure from Boston for England, late in October or in November, 1654, he with his Lieutenant, John Leverett, on their way home from the East, were together at Dixey's Tavern. Dusty and war-worn, and full of their great success in the reduction of these valuable French possessions in Acadia, no doubt these two most conspicuous military chiefs of the colony, — they had only the year before been selected by the

Lord Protector to fight the allied Dutch and Manhaddoes, and then ordered to divert against the French the naval and military forces raised for that object,—no doubt these worthies sat there long refreshing themselves with well-earned rest and the best cheer the tavern offered, and pouring into the eager ears of Landlord Dixey, himself a soldier of no mean pretensions, the story of “battles, sieges, fortunes they had passed,” whilst mayhap their foot-sore horses stood with drooping heads at the long hitching-rail outside, over which their plethoric saddle-bags and reeking girths were flung, or plunged eye-deep into welcome nose-bags and crunched with greedy haste their corn and beans, before boarding the horse-boat ferry-man Dixey was under bonds to keep ready for the accommodation of “horses, mares and other great beasts” at a fare of sixpence.

The documents on record in the trial for possession of the meeting-house bell give so graphic a picture that we cannot omit to transcribe some of them.

TO YE MARSHALL OF SALEM OR HIS DEPUTY
OR YE CONSTABLE OF BEVERLY.—

You are required in his Majestie's name to atach ye goods, & for want thereof ye bodyes of william Dodge jun^r : & Thomas Tuck Sen^r : and take bond of y^{em} to the value of sixty pound : with sufficient security for there appearance at the next County court held at Salem ye last tusedaye of this Instant month, to answer ye complaint of Capt^t : Richard More, in an action of the case for lleagally taking awaye a Bell from the plaintife out of his possession without his knowledg or consent which Bell hangs in Beverly meeting-house, & withoulding ye said Bell to the pl^{ts} : great damage. heareof make returne,

dated 18 : 9^{mo} : 1679 :

HILLIARD VEREN, *pr curiam*
for the towne of Salem.

I atached ye house & land of Thomas Tucke & read this 20 : 9 : mo : 1679 : & I atached William dodge Juner : of his, a table & cheist he tendered to me & gave him a somons in his house this 20 : 9 : mo : 1679 :

pr me HENRY SKERRY, *Marshall.*

Marshall Henry Skerry sworn sayth y^t Thomas Tuck told him when he served the attachm^t on him, y^t himself & some others took the bell, now in controversy, out of Capt. Rich^d more's yard, or possession, & farther saith not.

Mr Jeremy Hubberd of Topsfd.¹ sworne sayth, that he hath divers times heard Thom: Tuck say that hims. & Thomas Pecton took the bell now in Controversy from Capt. Richard Mores, this was in my time of beeing Minister of Bass river, now Beverly. & farther sth not.

Sworne in Court at Salem 28 : 9 : 79.

Ateste Hilliard Veren *Clr.*

The testimony of Capt. william Dixcey who sayth that soon after the taking of the french forts by Major Sedgwick Captain Lawthrop signified to us (by Letter) that he had procured a bell for us for our meeting-hous and sent it home by Captain more wishing us to fetch it home whereupon myself, with one or two more went to Capt. more for the bell. hee asked us whither wee had a bill of Lading to Receiue it by or an order under the generalls hand and wee hauing neither with us hee told us hee could not deliuer it. but denyed not that it was Captain Lawthrop's Bell.

Sworne in Court at Salem 28 : 9 : 79.

Atest: Hilliard Veren *Clr.*

The Testimony of Capt. william Dixcy aged 72 years who saith that soone after the return of Major Sedgwick from the french forts viz. S^{nt} Johns and port Royall which is about 25 or 26 years since. The said Major Sedgwick and Major Leuerett being in Company on a Journey from the Eastwards to boston happened to come into my hous and sate down and discoursed there awhile and among other things Major Leueret asked mee what our. towns name was: I Answered him that wee weear no town as yet: then sayd hee you may doe well to lett Major Sedgwick haue the hono^r of nameing the town when it is made a town for hee hath giuen Captain Lawthrop a bell for your place and this to best of my Remembrance was before wee had any notice giuen us of it any other way

Giuen in upon his oath formerly taken

28 : 9 : 79.

Ateste Hilliard Veren *Clr.*

The testimony of georg Stanly aged about 44 years who sayth that some years since which was about the tyme that Salem new meeting

¹ These brothers, Joshua and Jeremy, spelled their family name in a great many ways. In the court records, where it frequently occurs, HOBART was common. See Sibley's "Harvard Graduates," Vol. I, pp. 211-19 and 586-7.

hous was built¹ I being in company with captain Lawthrop Cap^t more and Cap^t Joseph gardner at Cap^t gardners hous² I heard Cap^t gardner say to Captain Lawthrop I think, said hee, wee must haue your Bell. for our meeting hous is bigger than yours and your bell is bigger than ours I think wee may doe well to change bells. Captain Lawthrop Replied hee knew no need of that: our bell said hee is very well where it is. the bell was giuen to mee for the place where now it is: Captain more answered him that although the bell weere giuen to you yet said hee I dont know. but I might haue kept the bell as well as you for I brought it home and I neuer gaue a bill of Lading for it neither was I euer paid for the freight of it. Captain Lawthrop answered Captain more that hee might haue kept such and such things naming seuerall things as well as the bell for I had no more bill of Lading to show for them said hee then for the Bell: Come Come said Captain more Let us drink up our wine and say no more of it I suppose wee shall neuer trouble you for none of them.

Sworne in Court att Salem: 28: 9: 1679.

Attest Hilliard Veren *Cler^s*.

The testimony of Anthony Needam aged about 48 years who sayth that I being a souldier under the Comand of Major Sedgwick at the takeing of the french forts viz Snt Johns and port Royall which is about 25 or 26 years agoe. and wee haueing taken the fort of Saint Johns and hauing found a bell at the said fort I heard Cap^t Lawthrop desire the said generall Sedgwick that hee would pleas to bestow the said bell upon him for the plantation where hee dweltt they hauing a new meet- inghous that wanted a bell. the said generall Answered that hee had otherwise disposed of that bell and therfore could not giue it him but I will promise you said hee to Cap^t Lawthrop that Iff wee take euer another bell thou shalt haue it: and afterwards when wee had taken port Royall and there being a bell there hanging in a hous they called the new ffryary Cap^t Lawthrop came to the s^d general Sedgwick hee being standing in the fort: and in my hearing asked him to giue him the said bell for the use abouesaid and the said generall freely gave it him according to his former promise and bade him take it down So Cap^t Lawthrop called me with him and he and I went presently up and threw the bell down and then Cap^t Lawthrop ordered mysele with some others to carrie the bell and ship it on board of Cap^t moors ketch for him so accordingly wee presently went and caried the bell now in controuersie and shipt on board of Cap^t mores ketch for Captain Lawthrop acordin to his order.

Sworne etc. 28: 9: 79.

¹ [A. D., 1670.] ² The Downing, better known as the Bradstreet house in Salem, afterwards the Globe Tavern,—the site next west of Plummer Hall.

The testimony of Clement Coldum¹ aged 56 yeares or thereabouts, testifieth and sayeth that about 25 years agoe, I was at St. Johns vnder the comand of Major Sedgewick and did heare Capt. Lothrop begg a Bell of ye said Major: whoe answered he had disposed of that Bell already but if they took ever an other bell, he should have it: afterwards wee took port Royall and there hung a bell in the new frierye. I being there with Capt. Lothrop in port Royall court yard did heare Capt. Lothrop againe renew his request to Major Sedgewick for that bell then hanging in the new frierye. The sd Major Sedgewick gave the bell to Capt. Lothrop for Basse River meeting house and bid them take the bell downe. That being done Capt. Lothrop with myselfe and some others put that same bell aboard Capt. More with an order to deliver the aforesaid bell to Bass River men and the said More promised that hee would and told Capt. Lothrop that he had noe need to trouble himselfe any further about the bell and further to my knowledge Capt. Lothrop sent home a letter to his wife by the said More² in which letter he ordered Basse River men to fetch the bell from Capt. More, which bell I have seene and heard in Bass River meeting house as I Judg further saith not.

17: 10: 79.

Sworne by Clem: Coldum before us:

Tho: Danforth, *Dep'y Govr.*

J. Dudley, *Assist.*

Major General Sedgwick, who was thus invited in 1654 by his son-in-law John Leverett, afterwards Governor, in the hearing of Dixey, to name the town, was every way worthy of such an honor.³ Johnson has said of him that he was "nursed up in London's Artillery Garden," and was "stout and active in all feats of war," while Carlyle calls him "a very brave, zealous and pious man." He died May 24, 1656, a sad loss both to the colony and to the home government, and must have been kindly remembered as often as the warning tongue of the friary bell made itself heard from the belfry of the new meeting house; and especially when, three years later, the agitation began which resulted ultimately in town autonomy and a town name. If he made

¹ Clement Coldum was afterwards a witness in the witchcraft prosecutions.

² Sedgwick and Leverett reached Beverly before Capt. Lothrop's letter.

³ He had attained the highest military rank possible in New England.

a suggestion as to naming the town, his words would have little less than the weight of law in the minds of Lothrop and Dixey, both trained to arms in the old school of soldierly deference to the wishes of a superior officer. Both of these, as well as Leverett, were living in 1668 when the town was finally chartered and named, and also in 1671 when Conant's petition for a change of name was presented to the General Court. In this last year, Leverett, always in a very influential position near the seat of power, after serving as deputy for many years, as Speaker of the House of Deputies, and as Assistant to Gov. Bellingham, became Deputy Governor under that magistrate, and two years later succeeded him as Governor for the colony. Had he been aware of a desire on the part of his father-in-law, General Sedgwick, that the town be furnished with a bell be called Beverly, and had he wished to see that desire fulfilled, he certainly had opportunities for doing so.

When William Dixey made his deposition in 1679 reciting the suggestion made at his house by Leverett to Sedgwick he well knew who named the town, and why it was named Beverly. If Sedgwick named it so, for some personal association he had with the name, Dixey knew that to be the fact. Would he have been more likely to state it or to omit it in giving his testimony? If, on the other hand, the town was named by some other person than Sedgwick, Dixey knew that fact. Would he have been more likely to follow up the statement that Sedgwick had been asked to name the town with the further statement that he did not do so? And again, if Dixey disclosed his knowledge on this point, would the magistrate in writing out his evidence have been more likely to record what he said, as bearing on the claim to the bell, or to reject it as irrelevant? The probabilities are nicely matched. It is the problem of the lady and the tiger over again!

But if Sedgwick really did set himself to the task of selecting a name for the embryo town, reasons are not wanting which may have inclined him to the name of Beverly. The Sedgwicks are of a very old Yorkshire stock, and had once intermarried with the Percys, amongst whose family titles was that of Earl of Beverley. Before 1584, Barbara, daughter of Robert Percy of Scotton, the fifth Robert in a line of descent from John, had intermarried with "Robert Sedgwicke, Gent," who may well have been the grandfather of our Major Genl. Robert, his namesake. Not only was the Borough of Beverley with its market and its minster a very conspicuous centre in Yorkshire,—in fact, so strong a place as to have afforded refuge to Charles I, in the waning fortunes of his struggle with the Parliamentary forces,—but there is also at Pateley Bridge across the River Nidd, near Ripley in the West Riding of Yorkshire,—a locality in which the Sedgwick family as well as the Percy family seems to have been most numerous,—a Beverley or Baverley Hall and Manor, bought in 1675 by Lady Mary, consort of Sir John Yorke, which has remained ever since in the Yorke connection. It is easy to imagine associations with this fine old place which might have prompted a well-bred Englishman, brought up within ear-shot of its hunting horns, although his grandmother were not a Percy, to recall with interest the name of Beverley; and so of Beverley Park under the shadow of the Cathedral of Canterbury, near which also it is thought that there were Sedgwicks living, and so again of Beverley Bridge near Cambridge, to which the University crews take their evening "pull" in boating practice.

But a truce to speculations in philology. Perhaps we shall never know how Beverly came to be Beverly, but there is certainly reason to suspect, from comparing the lists of townsmen and the names on Conant's remonstrance, that the parties for and against the name "Beverly" were

divided very nearly on the line of cleavage between the "old planters," and the "new charter" settlers. Without doubt the arrival of Endicott gave an impetus to the movement amongst the first settlers of Salem to cross the creek and to plant on the Bass River side. Their grants were mostly there, and 1628 is at once the date of the beginning of the Bass River settlement and of Endicott's arrival. It would not be surprising if Conant's protest against the name of Beverly in 1671 represented the last expiring struggle of the "old planter" interest.¹

After a forenoon spent in interesting rambles and delightful views from the many elevated points, both natural and artificial, which this region offers, with visits to old houses, stone quarries and other attractive features, an *al fresco* lunch followed in the breezy, ample barn of Mr. Peabody. This place of meeting was not far from the station and both are in the midst of an extensive plain, formerly a favorite camping ground and training field for militia musters and sham fights, as well as a frequent resort of the red-skinned gentry who antedated us as proprietors of the soil. This last fact appears from the local reputation the plain has long enjoyed as a promising field for the unearthing of arrow-heads, stone chisels, mortar-pestles, fish hooks and other Indian implements and ornaments of enduring substance. And as if to give assurance that its ancient prestige was not yet waning, the piece of ground in front of Mr. Peabody's barn, which was being broken up with the plough while the meeting was in progress, brought to light a sharp-cut Indian gouge or chisel of trap rock with beautifully perfect edges which seemed ready for instant service, had there been need to hollow a canoe out of some spruce or hemlock trunk with the aid of fire.

Whether the Indians were attracted to this spot by the

¹ See "History and Genealogy of the Conant Family," p. 116-125.

same characteristics as our ancestors, we cannot determine. The soil is strongly impregnated with iron, which in its oxidized condition gives a reddish-yellow color, and considerable masses of bog-iron ore, one of which was exhibited at the station, have been taken out from time to time, especially when, for lack of better, this crude deposit was roasted in kilns at works in Lynn and elsewhere, and made to yield up its slight percentage of the useful metal by burning out the clay and vegetable impurities united with it. If the Indians had advanced thus far in their knowledge of iron-working they might have sought the plain at Montserrat for the sake of its bog-iron. Or they may have been sagacious enough to perceive, with that keen instinct for natural remedies which marks their therapeutic practice, that the waters of the little chalybeate spring, still bubbling out of the soil here as it has done for ages, had medicinal values not to be neglected. In this judgment they have the endorsement of modern science; for the spring water, upon examination, is found to respond promptly to the common tests for iron, producing that splendid Prussian blue with ferro-cyanuret of potassium, and that royal purple with salicylic acid, which delight the eye of the analytic chemist and indicate the presence of the mineral in sufficient force to impart curative qualities.

Early in the century when railroads were not, and only a way or two crossed this extended plain, May trainings and autumnal musters were often held here, with all the accessories and abuses which marked at the time the decadence of our state militia system. Here Joseph Gardner from March street, Salem, the famous baker and purveyor of "cakes and ale," and various entertainment, the "striped pig" included, set up his flying-horses and merry-go-rounds, his refreshment booths and tents for games and shows; and the two large, scrawny-looking, white pines, now standing together quite by themselves, near the min-

eral spring, were planted there by his hand. This atmosphere of periodical revelry may not improbably have attracted to the neighborhood the stalwart old negro, Robert Arnold, better known as "Black Bob," whose humble cabin, of which barely a trace survives to mark the spot, stood on the rising ground opposite the station towards the north. Bits of the cellar-wall are probably the only monument now left of this stately and interesting relic of African slavery in Massachusetts, whose bald and grizzled head was always bared with obsequious deference, bred of his early condition in life, in presence of all such as he saw fit to regard as the magnates of the town. But for the venerable jurist, Nathan Dane, he reserved a special greeting. On observing the approach of 'Squire Dane, "Black Bob" selected a convenient spot whereon to "crook the pregnant hinges of the knee," and, spreading a large bandanna handkerchief on the ground on which he placed his hat, prostrated himself with all the humility of a Moslem devotee, bending his majestic figure to the earth at the same time that he invoked heaven's choicest blessings on "Masa Dane."

President Wheatland called the Institute to order at half-past two o'clock, and invited Vice President Rantoul, who was present, to take the chair. Mr. Rantoul opened the session with some remarks on local matters, alluding to the ice trade at Wenham Lake¹ and the vast proportions this winter's husbandry had attained there; to the last Field Meeting in this neighborhood held at Wenham Lake on February 11, 1882,² and to a famous one at Stanley's Grove, close by, on June 24, 1865;³ to an old way leading from Montserrat to Draper's Point near Bass River

¹ See Hist. Coll. Essex Inst., Vol. VI, pp. 82-3, 141-52. Also Appleton's American Cyclopædia, article ICE.

² See Bulletin of the Essex Institute, Vol. XIV, pp. 58-63.

³ See Proceedings of the Essex Institute, Vol. IV, pp. cxxxii-cxxxvii.

Head and also branching to the right and leading by Chipman and Brimble Hills towards an old mill fed from Beaver Pond, passing in its course an interesting moraine some half a mile long, hidden in the woods near the mill pond. He further alluded to the Woodbury farm near by with its old homestead, containing timbers which were thought to be parts of the first cabin built on the original two hundred acre grant of 1635 "by the great pond side;" to the commanding view enjoyed from the various elevations in the neighborhood, and to the exciting scene witnessed from these points at sunset on the first day of June, 1813, when the smoke of battle between the Chesapeake and the Shannon could be seen from the hill tops along shore, rolling over the bay just outside Baker's Island, and when every lookout and housetop were so crowded as almost to justify the sarcastic verses of the British school-boy, beginning,

"The Chesapeake so bold out of Boston, I am told,
Came to take a British frigate neat and handy,
And the people of the port came out to see the sport,
With their music playing Yankee Doodle Dandy!"

Mr. Rantoul first introduced Mr. John H. Sears of the Peabody Academy of Science, who spoke at some length of the geological features of the section, with which he remarked he had been very familiar from his boyhood; saying, among other things, that the entire rock formation of the eastern part of Essex county was composed of eruptives, or, as in the case of the gneissoid schists which are of sedimentary origin, such deposits are only seen where the eruptive granites, syenites and traps have turned them up on edge. These gneissoid schists are probably the oldest rock formation in New England, which is proved by its being cut by all the others, but may probably be contemporaneous with the gabbro, as the two masses are found

thoroughly mixed at one part of the outcrop at Woodbury's point. The granites of this region are of the same kind as those of Peabody, and having a strike from the southwest to the northeast underlie the towns in Essex county, as follows : commencing at North Saugus, crossing Lynnfield, Lynn northwest of Dungeon rock, through Peabody, Ryall Side, Beverly, East Wenham, Essex, West Gloucester, Annisquam to Halibut Point and out into the Atlantic ocean. All the granites of this region are classed as hornblendic granite, but there is a difference in the kind of feldspar in the various quarries ; this Peabody, Beverly and Cape Ann granite is composed of quartz, hornblend and oligoclase feldspar, whereas the granite which outcrops at Briscoe Hill, if we follow it across the cove to Mingo's Beach and Manchester to Gloucester and to the Rockport Granite Company's quarry, running exactly parallel to the other, we find it is composed of smoky quartz, hornblend and orthoclase feldspar. These granites at Montserrat, Beverly and Rockport are substantially the same as those of the Quincy quarries, the general points of difference being in color and crystalline texture ; and this is due in a great measure to the rock as quarried in Beverly and vicinity being taken only from the surface or the outer joint plains, whereas, if the works were carried to a greater depth, lighter colored and better material, probably as good as the Rockport granite, would be found, and could be quarried at a much less expense. Mr. Sears said that he had found a number of species of minerals new to the county collections ; and in regard to the dike formations, that, instead of their being formed of only two different rock structures,—as usually understood, dolorite dikes and diabase,—he found sixteen different rock formations in them.

Mr. Sears then went on to speak of the plants col-

lected during the day, among which were the *Apios tuberosa*, or Ground Nut, one of the *Leguminosæ* in the pulse or pea family, which is very profuse in its flowers at this season of the year,—a hardy, herbaceous climber, suitable for covering screens and unsightly fences, easily propagated by its tubers. Then the speaker called attention to the Indian Pipe, or *Monotropa uniflora* and *Monotropa hypopitys*, and showed its relationship to the blueberry bush which is in the same family with it. Among the more interesting plants, he exhibited the *Rhexia Virginica* or Meadow Beauty. This plant is easily propagated from its tubers, and would make a decided ornament in the garden. Another interesting plant was the *Corallorhiza multiflora*, coral-root, one of the *Orchidaceæ*, the root of which resembles a bunch of pink coral.

The next speaker, Mr. John Robinson of the Peabody Academy of Science, read a carefully elaborated paper, entitled, "The native trees and tree cultivation in Essex County," premising the remark that the unspeakable charm of our old New England village as well as of our modern seaside resort is very largely traceable to the variety and abundance of shade-trees. At the request of Mr. Robinson, no abstract of this valuable paper is inserted here, the material of it being printed in full in the Twenty-Eighth and Thirty-Fifth Annual Reports of the Massachusetts State Board of Agriculture, before which parts of it were read in December, 1880, and in December, 1887; also in the Report of the Committee on Forest Trees of the Essex Agricultural Society for 1884, printed in that year's Proceedings of the Society.

Mr. Frederick A. Ober next read extracts from an elaborate paper on the "Flora and Fauna of Beverly," contributed by him to Lewis & Co.'s History of Essex County, Vol. I, pp. 675–9, where it may be found in full. He illus-

trated this reading with anecdote and incident of a local nature, and with bits of local history, showing the marked changes which two centuries have brought in personal and domestic habits and modes of living.

Mr. Joseph Dane Tuck then exhibited a file of papers containing autograph letters of much interest, together with other antiquarian matters. There were letters of his great uncle, Nathan Dane, of whom Mr. Webster said in the senate in 1830 that, for securing freedom to the Northwest Territory, he would take rank with the great lawgivers of antiquity,—letters of George Cabot, in 1798, the first Secretary of the Navy of the United States,—of Hugh Hill, a cousin of Andrew Jackson, the redoubtable privateersman of the Revolution,—of Dr. Fisher, a founder of the Philosophical Library and of the Salem Athenæum,—of William Gray, the great ship owner,—of Joseph White, of William Prescott, of Ebenezer Francis, of George Crowninshield, of Joseph Lee, of Israel Thorndike, and of Patrick T. Jackson.

Mr. Tuck also showed admirably-done counterfeit notes on the Beverly Bank, printed at New Boston, New Hampshire, in 1804, on very thin, strong, linen paper made in Danvers. The ornamentation of the bills, at that early day, was unique. The \$30 denomination bore both a hand loom and a power loom, symbolic of the high expectations then entertained of Beverly's pioneer venture in the spinning and weaving of linen, wool and cotton. Other issues were decorated with figures of "Rectitude" and of "Plenty," twin patronesses of finance,—with the elephant and the cod, types of Asiatic and of New World opulence, while commerce and the fisheries were still further symbolized by a schooner and a barque, both under full sail. It will not be amiss to print a portion of the correspondence touching this interesting case of early fraud,

if only to show that dealing with detectives and informers was as ticklish a business then as now, and that Canada was within as easy reach of the successful swindler, and extradition as great a desideratum, at the beginning as at the end of the nineteenth century.

Letter addressed "To Israel Thorndike, Esq.,
Beverly,
with 4 Counterfeit Notes enclosed,"
[postage marked 24 cents.]

April 11, 1804.

SIR.

Wednesday.

You probably know that the Net has been sprung & caught 4 prisoners with 5 plates of which your 30\$ is one. I have 50 of the 30\$ bills & they appear to me so well done that if any of them get abroad they will pass. I will if possible, ascertain whether any were struck by this plate before. I *trust* that all are secured which were struck now. It appears that our Agents with the exception of K . . . have managed the business extremely well & I cannot but flatter myself that the Community will be saved from great present abuse & the Banks from much inconvenience. I enclose 4 of your 30\$ counterfeits for your inspection and remain Sir,

Your most obedient Servant,

GEORGE CABOT.

the Plates taken are

Beverly	\$30.
Essex	8.
Portsmouth	4.
N. Hamp.	10.
& Union	10.

Newburyport, 12 April, 1804.

Dr. SIR.

I have rec^d yours of ye 10th, and to-day have one from Mr. Fletcher at Amherst inclosing specimens of the Counterfeit Bills among which is a 30 Dollar Bill of your Bank which Peaslee engraved at New Boston. As there is the utmost Hazard that Peaslee will take himself off the moment he hears of the arrest of his comrades, I have directed Bayley, our Sheriff, to secure him and I will hold him for examination untill you have Time to send on the necessary Process which ought to issue in New Hampshire. You will perceive the necessity of an immediate attention to this Business.

It is of the utmost consequence that Peaslee's Progress should be arrested.

With much Respect yours

DUDLEY A. TYNG.

I. THORNDIKE, Esq.

I hope you will be able to furnish Evidence also against P. Wingate who is a bold, bad man.

Addressed to Israel Thorndike, Esq: Beverly.

Newburyport, 17 April, 1804.

DEAR SIR.

Mr. P . . . will inform you of our Proceedings here. I congratulate you on our success thus far.

Every credit is due to for his energy and Perseverance. But as Money is his sole object, and as he must quit the Country immediately after the Conviction of these offenders, it behoves the Public to be liberal in their acknowledgements to him. And indeed, without some positive, previous stipulations, I am yet afraid we may fail of Convictions where he is the only witness. Mr. P . . . has given him assurances of 2000 Dollrs. I have reason to believe that this will be the lowest sum that will effect the Purpose.

With Esteem & Respect

Yours, etc.

DUDLEY A. TYNG.

Letter addressed to

"William Gray, jr Esq
& Israel Thorndike Esq."

Boston, April 18, 1804.

GENTLEMEN:

I have read your several letters from Messrs. Fletcher & Atherton & from Mr. Tyng, & having conversed with Mr. P . . . on the proposition of subjecting the Banks to an eventual payment of \$2000 in addition to the other expences incurred by the pursuit of Counterfeiters, I feel authorized to say, in behalf of the Bank of the U. S., Union, & Boston, that they will contribute their parts of such payment in an equitable ratio to be hereafter agreed on, & have no doubt the Massachusetts will concur. You will therefore please to recommend such a course of proceeding as will be likely to give complete effect to the measure contemplated, *so that on the one hand the testimony of the witness may not be vitiated nor on the other the money paid without having it:* prudence requires extreme caution in this case which I have no doubt will be practised. I am, Gentl, very respectfully,

Your mo. ob. servant,

GEORGE CABOT.

A Memorandum was inclosed in another handwriting, in these words :

"1, To give such evidence, *consistent with truth*, as in the opinion of the Solicitor General will convict the offenders: 2d, to conduct in such a manner in the whole affair as that no objection shall be made on the trial to his testimony (competency) on account of any agreement or proposition whatever of his relative to cause or causes: 3d, anything allowed him must be for Journies, labour, services & expenses in finding out the offenders."

At a meeting of the several Committees from the Boston Banks held at the Hall of the Union Bank on Wednesday, 25 April, 1804.

Boston	}	Present from the Branch Bank,—George Cabot,
Massachusetts		" " " Massach ^{ts} Bank,—
Branch		Aaron Dexter.
Union		R. G. Amory &
Beverly		John Phillips
Essex	}	" " " Union Bank,—
		John Welles &
		Samuel Cobb
		" " " Boston Bank,—
		Wm. Sullivan.

The Essex Bank & Beverly Bank represented by George Cabot, Esq. Hon^{ble} Mr. Cabot was chosen Chairman of the meeting.

Wm. Sullivan was chosen Secretary.

Voted 1st. That the expences of prosecutions now pending or which may hereafter be pending, for detecting & punishing counterfeiters of the bills of the Banks which now are or which may hereafter become parties to this agreement be assessed on such Banks in this ratio; viz: one third part of such expences on the bodies corporate; and two third parts thereof on the amount of their Capitals respectively.

Voted 2^d. That a Committee of seven be appointed, four of whom shall be Bank Directors in the Town of Boston, appointed one from each Bank therein and three of whom shall be Bank Directors in the County of Essex, under the Direction of which committee such sums of money shall be appropriated exclusively as they may think necessary to carry into effect the objects of this association.

Voted 3^d. That a copy of the proceedings of this committee, signed by the Chairman, be laid before the several boards of Directors in this town at their next meetings respectively, that the Committee mentioned in the 2nd Vote may be appointed.

Voted 4th. That the Chairman of this committee be requested to communicate these proceedings to the Boards of Directors of the Banks in Essex, with such observations as he may think pertinent.

GEORGE CABOT, *Chairman.*

Addressed to

"Rufus G. Amory, Esq.,
or William Sullivan, Esq.,
Boston."

Amherst, March 29, 1805.

GENT^N:

I have this day received from Geo. Woodward Esq of Haverhill, N. H. (an agent of y^e N. H. Bank whom I have occasionally mentioned to you) a letter, enclosing the correspondence of Lewis Lyman of Montreal to him on the subject of counterfeit bills. He writes,—“In consequence of my representation the Governor of this Province called a privy council: present y^e Att^y General & Chief Justice—the latter Gentleman gave it his opinion that the criminal laws of the Realm would effectually take cognizance of any person having counterfeit bills in possession or materials and implements for their manufacture, & the Att^y Gen^l, Mr Sewall, was directed to make every inquiry into the business & prosecute every offender in this province.”

He observes that “from the frequency of counterfeit bills offered from Stanstead”¹ (the residence of y^e celebrated Stephen Burroughs & colleagues) it is more than probable that “a search warrant will be granted to that place”—and adds—“If you are in possession of any information on the subject you will be doing a service by communicating the same. *Bailiffs* in this county are some of the lower class of people, & the apprehension of these fellows might be a little dangerous & it would be necessary, to ensure the faithful performance of their duty, to give them a douceur; it will be also attended with a good deal of trouble & expence, to prove y^e Bills to be counterfeit, which no individual is willing to pay,—A few weeks since a man from Stanstead offered me several Bills, one of \$20, U. S. Bank, payable in Philadelphia; one of \$5 D^o N. Y. Branch Bank, and one d^o d^o d^o, Boston Branch Bank, & I have one now in possession of the latter description which he passed in this city; the counterfeiters, believing themselves secure, are off their guard, & now is the time to make a general sweep with them. You will see I am still warm in the cause of detection, altho’ I have been treated with such neglect by those who are more interested than myself; Yours &c. Lewis Lyman.”

Mr Woodward writes that not less than 20 counterfeit bills have been offered at their (Coos) Bank within 60 days past. He is Cashier of that Bank, & adds his persuasion that the principal part of the Banks (meaning, I presume, in this State) will contribute their proportion of the expence. Mr Woodward has been vigilant in his agency in

¹ A little Canadian village, near Rock Island, just over the Vermont border.

his quarter, collected much information & brought in a number of counterfeit Bills that can be traced to y^e rogues in & about Stanstead. I have formerly solicited his particular attention to that quarter, at the same time informing him that I could not guarantee any compensation but presumed he would be indemnified for incidental expences of this nature, & Mr Peabody assured me last summer that, if anything effectual could be done at Canada, I might inform the prosecutors at Boston. Mr Woodward's agency should be continued & compensated by y^e N. H. Banks. From Mr W's situation, interest & assiduity in the cause, this was supposed of considerable consequence. Since the disclosures of the extent of the combination of y^e counterfeiters & the full proof that their principal seat & great mint was at and about Stanstead, I have been decidedly of your opinion that nothing effectual had or would be done towards a radical cure, till they were broken up in that quarter by the concurrent aid of the Government of Canada. You will perceive what is & judge what may & ought to be done in that quarter. If any thing, I will suggest some observations which can in no event be worse than idle. They will however be delivered with much confidence in their utility & practicability. I propose—That some person be furnished with Letters from the Governor of Massachusetts & such other persons of distinction as may be deemed necessary, & vested with as much discretionary power as may be judged proper. That he repair to Montreal as soon as may be, to advise with & aid the Governm^t of that place in the prosecution. That he endeavor to procure a Law in that province for the apprehension of Criminals who may have fled from any of the United States.

If arrests are made at Stanstead or elsewhere in Canada, that He be present, & be instructed, should any important disclosures be made, to communicate immediately to the Att^y Gen^l of any state, or first to Boston, if that's best, every thing that may require attention in N. Hampshire, Ver^t, Conneticut, N. York or elsewhere. I mention these states because they have evidently there connexions with y^e Stanstead rogues.

That he have the liberty and the means, particularly, of sending on a friend into the garrison itself, before y^e attack, to watch movements, collect evidence & communicate particulars before the onset; and to select men of spirit & vigilance in the vicinity to assist in the arrest,—common means & ordinary Bailiffs will not answer. One near Stanstead (by the name of R . . .) is evidently of the Gang.

The apprehension of Stephen Burroughs with a few of the Ring-leaders (several of whom there is evidence ag^t in this state) I apprehend would fully answer the purpose. If, from this prosecution, there should transpire nothing which would, without much expence, lead to the conviction of some leading offenders in the states I have

innumrated, I should be decidedly for following up the Blow in Canada, by the publication of such facts & circumstances as would convict, in public opinion, some notorious offenders in y^e U. S., particularly in N. York. This is a cheap course and places them either in the way to the Gallows or beyond the power of pursuing their heretofore successful career in villainy.

The whole expence of such prosecution, if conducted with unity of plot, I am convinced would not exceed what was p^d for ours in the county of Hillsborough, or for y^e conviction of Wingate & Peasley.

Should you judge y^e subject worthy of attention, & cannot, without difficulty, employ a more suitable agent or agents, & should see fit to furnish me, any time in May, with the above mentioned credentials, I will, for \$2000 outfit, engage to undertake the business, procure the necessary evidence & aid, and within 60 days from the time of leaving Amherst secure Burroughs & a sufficient number of his colleagues in Montreal, or such of the States as they can be punished in & defray every expence connected with the arrest & procuring the evidence, till time of trial. If the business should not be done to your satisfaction, I will return, at thirty days notice, such part as any three men you may choose shall say, & if to your approbation & by your concurrence, will engage to refund the above sum in one year from its receipt, & rely on such compensation as may be given by Banks in the other States.

If this communication is entitled to your consideration, I shall be ready to receive any communication and attend to it after the first week in May.

Yours with esteem,

(signed) D. E . . .

P. S. I have written to Mr Woodward advising him to request Mr Lyman to enjoin secrecy on arrest, & in the mean time to collect evidence, promising as requested to correspond & consult with you on the subject.

(signed) D. E . . .

These papers were commented on and discussed in an interesting manner by the Hon. John I. Baker, who was introduced as the best informed of living men, in the history of Beverly. Mr. Baker went on to speak of the great historic names which illustrate that history,—Woodbury, Eliot, Hale, Thorndike, Dane, Cabot, Lée, Rantoul, Francis — and the conspicuous places filled in our day by such representatives as Judge Woodbury, Samuel A. and Charles W. Eliot, John P. and Edward Everett Hale, Israel, William and Albert Thorndike, Henry and Col. Henry Lee, Robert Rantoul, Robert Rantoul, jr., Eben-

ezer Francis, Charles Levi Woodbury, J. Elliot Cabot and Henry Cabot Lodge. In closing, he alluded in terms of commendation to the chairman's recent contribution to the history of the Woodbury Family, and feelingly related some family reminiscences of his own connected with the perilous ventures of the early fishermen, a craft which had numbered many of his ancestors in its sturdy ranks and in which some of them had lost their lives.

Hon. Nathaniel A. Horton was next called on, and said that if we could make out a table of pedigree and descent for a tree as we did for a man, he would expect to find growing in these woods to-day some lineal offshoots of the stalwart oaks which went to make the knees or keel of the frigate *Essex*, built but a gun-shot away by the *Essex Patriots* of '98. It was an interesting thought that these giants of the woods had their history and their pedigree,—that the tree family had its family tree, so to say, as well as the more intelligent beings who sometimes so wantonly destroyed them. The Great Elms, junior and senior, on Boston common; the Charter Oak of Hartford; the Endicott Pear tree; what scenes they had witnessed, what histories they could write,—had they the gift of language,—were there but "tongues in trees." He then alluded to Nathan Dane, a Beverly man, to whom Webster had ascribed the authorship of the famous "Ordinance of 1787," now in process of commemoration in the great northwestern section of the Union, whose virgin soil his wise, humane and patriotic forethought had shielded from the polluting touch of slavery. Mr. Dane was thought to divide with Manasseh Cutler of Hamilton and Rufus King of Newburyport, two other sons of *Essex*, the entire credit of dedicating the Northwest Territory to freedom.

After the customary vote of thanks, which was gracefully responded to by Mr. Peabody, the session of the Institute was adjourned.

FIELD MEETING AT BRADFORD, SEPT. 16, 1887.

The third field meeting of the season was held at Bradford, Sept. 16, 1887, by invitation of Hon. George Cogswell, President of the Trustees of Bradford Academy.

The day was fine and the party left Salem for Bradford *via* Somerville and Haverhill by the 8.43 o'clock train on the Boston & Maine Railroad. Bradford Academy, where the meeting was held, was reached at half-past eleven o'clock and a cordial welcome was extended to the visitors by President Cogswell and other officers of the Academy.

What remained of the forenoon was spent, as usual, in delightful rambles among the quaint and rural scenery of this charming old town as well as in inspecting the much enlarged and beautiful grounds surrounding the Academy Hall, and in enjoying from the roof of the main building, now much extended by recent additions of concert and lecture rooms and gymnasium, an unrivalled panorama, including the lovely Merrimac, a picturesque view of the growing city of Haverhill, with the fine estates of Indian Hill and Kenoza and the cardboard castle at Laurel Hill, lately occupied by Sir Edward Thornton.

At one o'clock lunch was laid in Academic Grove, where many kind attentions were paid to the party by the people of Bradford. At half-past two o'clock the afternoon session was called in the hall of the Academy, the President, Dr. Wheatland, in the chair. There were about three hundred persons present, including the pupils of the school.

The President, after brief introductory remarks, presented Robert S. Rantoul of Salem, who called attention to the origin of the Lyceum system. Mr. Rantoul said that it had been claimed that the first Lyceum organization appeared in the town of Millbury, near the City of Worcester; but from his own investigations he was satisfied that the honor of originating the American Lyceum system belonged to the little town of Methuen in Essex County, and that in this town a Lyceum was established more than two years earlier than anywhere else in this country. Timothy Claxton he thought was the man who originated the system. In closing his remarks, Mr. Rantoul spoke of the Peabody Academy of Science and of the Essex Institute, which, while both were located in the City of Salem, because they must be located somewhere and no better point offered, were county institutions nevertheless, both in their spirit and in the terms of their charters, and it was the ardent wish of the officers of both the Academy and the Institute that the people of the county should understand this fact and avail themselves freely of their privileges when in Salem by visiting the rooms of the institutions, their museums and libraries, and regarding both the Peabody Academy of Science and the Essex Institute as not local Salem affairs but as Essex county organizations established solely for the use of the people of the whole county.

Hon. George Cogswell remarked that Mr. Rantoul had well stated the point which he himself had proposed to make, to wit:—that the people of the county should realize the fact that the two Institutions before referred to, while located in Salem, the railroad centre of the county, were in fact Essex County societies, and that the residents from the northern part of the county would be always and warmly welcomed at the rooms of the Institute and of the Academy, whenever in Salem.

The President introduced Mr. George D. Phippen as one who joined the Institute fifty years ago, and who was to-day its Curator of Botany and its Treasurer. Mr. Phippen read a paper of value and interest entitled, "The *Helianthus* and Kindred Genera."

Mr. Phippen said he had chosen for his subject the Genus *Helianthus* and allied plants, having had it suggested by the interest that has been given of late, perhaps unwittingly, to these striking but rather coarse flowers, and also by their popular use for personal adornment. These and other composite flowers are being largely used for that purpose, and their selection has extended from the lowly daisy or day's-eye, to

"The sunflower that turns to her god when he sets,
The same look which she turned when he rose."

this pretty poetical conceit is not, however, borne out on investigation.

We have no true native daisy in this country, but several of the flowers much used in the manner described, being fastened in copious bunches upon the dress, are called by the name of daisy, such as Golden daisy, Michaelmas daisy, Ox-eye daisy, etc. That brilliant intruder from the west now so common in the grass-lands of New England, *Rudbeckia hirta*, is a favorite in this way, and has nearly usurped the name of "Ox-eye daisy," which rightfully belongs to our wild *Chrysanthemum* or white weed, *Leucanthemum vulgare*. May we not, therefore, name this contagious fancy, which will have its day, the "Daisy craze" reminding one of Dryden's troop of knights and dames who joined the chorus of the ladies' song :

"And still at every close, she would repeat
The burden of the song,—The daisy is so sweet!
The daisy is so sweet!"

The sunflower tribe of plants with their bold yellow

flowers are natives peculiarly of North America and greatly abound in the southwestern states, Texas and Mexico. They perhaps never before received such marked attention, for they are generally rough, coarse herbs and their flowers are inferior in texture, fragrance and general loveliness to the flowers of spring and the early summer. Many of the choice species of *Helianthus* found their way into the gardens of England early in our colonial history, and nowhere have American plants received greater favor.

Helianthus tuberosus, whose potato-like roots furnished pottage for the Indians long before the advent of the white man upon these shores, has been cultivated in Europe more than two hundred and fifty years. An account of the large annual sunflower "*Helianthus annuus*," from Mexico, was published in England in 1568, and it is recorded as cultivated in English gardens as early as 1596.

One of the prettiest varieties of the annual *Helianthus*, being a diminutive of the cucumber-leaved variety, is called Sutton's favorite and is a low growing plant with flowers not much larger than a coreopsis. The double varieties of *Helianthus annuus* are marvels among double flowers in their multiple fulness and array. Of the perennial species there are many worthy of cultivation, such as *Helianthus occidentalis*, *decapetalus*, *divaricatus*, etc.

Helianthus multiflorus-grandis is deservedly a popular garden plant and to many persons suggests a double yellow dahlia. *Helianthus orgyalis*, from Arkansas, with its narrow drooping foliage and tall panicles of flowers is truly excellent. *Helianthus Maximillianus*, from Mexico, is of recent distribution and valued for its late flowering. Our two Rudbeckias and the rose-colored species from Texas may well find a place in our gardens.

Mr. Phippen also spoke of the obtrusive beauty of other genera of that great family the Composites or Aster-

worts, "star flowers" embracing all *sunflowers* as well,—such as Dahlias, Zinnias, Coreopsis, Asters, Tagetes, Calendulas, etc., many of which are natives of North America and are universally cultivated. Some species, however, with which we are equally familiar are exotic and of great known antiquity. Our *Rudbeckia laciniata* was found in Canada and described by Cornuti in 1635. *Calendula officinalis* from the south of Europe has been known and cultivated in New England since the time of Josselyn in 1672. *Chrysanthemum Indicum*, now so familiar as a greenhouse plant, was figured in paintings and wrought into the royal dress of the Chinese before the Christian era. Seeds of *Centaurea cyanus* or blue bottle have been found in quantity among the debris of the lake dwellings of Switzerland. *Artemisia absinthium* or wormwood was employed in the earliest times in the sacred rites of the Romans. That great summarist of ancient botany as he has been called, Pliny, who wrote early in the first century, describes in his compilations, drawn, no one knows from how many earlier sources, certain plants of this order, well understood by us and easily traced out in his writings, such as elecampane, yarrow, camomile, tansy, wormwood, marigold, centaurea, chickory, burdock, and even "Bellis" the true and humble daisy with which we began.

Mr. Phippen closed his remarks which had largely related to the cultivation of the plants considered, in a few rather disparaging comments on the popular tendency of degrading the flower garden by geometrical beds of colored-leaved plants — now so much in vogue, — a style good in itself, as an architectural adjunct, but which of necessity discards the immense versatility and beauty of the floral creation. He made a plea for the return to our first love, to the old-fashioned garden of our fathers, with its borders of grand perennial plants and shrubs, such as roses, honey-

stickles, lilacs, pæonies, hollyhocks, larkspurs, phloxes, bulbs in variety, etc., and he looked forward to a day not far distant when much greater attention would be given to the cultivation of shrubs, vines and herbaceous plants, and when, with the knowledge of hybridization now possessed, many new varieties could reasonably be expected to appear if scientific florists were encouraged in their cultivation and production.

Dr. William Cogswell of Bradford said he had not appreciated the usefulness of such organizations as the Essex Institute until recently, for he had lately been engaged in preparing an article for the forthcoming History of Essex County, and to know just where to find the material for such work was of the greatest convenience to him. The common things and every-day occurrences of to-day were materials for the history of the future. As an instance of this Dr. Cogswell produced the old diary of Parson Stephen Peabody for the years 1786-89, in which he found an almost complete history of the town of Atkinson, N. H., for these years; the minutest occurrence was noted, and from these records kept by one careful and methodical man he had gleaned facts of infinite historical value.

Vice President Goodell was then introduced. After expressing his pleasure at being able to attend this meeting he added that, in conformity to the established practice at the field-meetings of the Institute for each member to bring in the results of observations made by him during the day in the line of inquiry in which he was specially interested, he had passed most of the morning in the office of the town-clerk, looking over the old records of the town.

He had found there some items of the Revolutionary period, which he would make the theme of a few remarks that he hoped might prove of interest to the meeting.

For instance, according to several entries in the year 1780, the price of beef appears to have been at the rate of £600 for 400 lbs. of beef, or about 30 shillings per pound; while in 1782 the same weight of beef cost about £7, or about \$23.33 in our present currency, or $4\frac{3}{4}$ pence per pound in currency of that date, as witness the following entry:

Paid to John Day, jr., in full

Feb. 13, 1781, for 400 weight of beef £600.

May 16, 1782, Josiah Beacon in full for 370

weight of beef £7.12.4.

This remarkable difference of price he said was owing to fluctuations in the value of Continental bills of public credit, which in 1780 stood at the rate of £40 in bills to £1 in coin. This depreciation rapidly increased until May, 1781, when, in some places it had reached the ratio of £500 in bills to £1 in coin; and then suddenly the bills ceased to circulate.

The inflation and depreciation of the currency was the source of untold misery to the laboring classes and to the families of the soldiers, who had faithfully served in the Continental Army, and proved the utter ruin of thousands who had enjoyed comparative affluence.

Mr. Goodell then pointed out the lesson which the experience of our fathers with an unredeemable paper currency should teach us, and compared the Revolutionary experiment with that of the nation in more recent times and declared that no circumstances could ever justify the issue of a circulating medium, productive of such evil results.

Mr. Goodell professed his unabated interest in the Institute, to which he had been prevented by circumstances beyond his control from devoting himself with his former punctuality and zeal, but hoped the time was near when his attendance upon the meetings might be more regular and frequent. He thought the value of the society's work was

greater than even its warmest friends were inclined to esteem it ; and nowhere else than in Essex County has the experiment of an organization formed for the acquiring and diffusing of useful knowledge, in so wide a field, been successfully carried on for so long a time, and with such encouraging results.

Brig. Gen'l William Cogswell of Salem was then introduced and said he hardly knew why he was called upon to speak, except that he was interested in both the Institute and the Bradford Academy, and he knew how much good both institutions were doing in their respective lines. He complimented both organizations, and said he was reminded by Mr. Goodell's talk about a depreciated currency, that during the War of the Rebellion he ate a chicken for breakfast which cost him one hundred and fifty thousand dollars in Confederate money.

Prof. I. N. Carleton was next asked to speak. He began with the query, What can be expected of a schoolmaster after four o'clock in the afternoon? He commended the work of the Institute as bringing the people out of their offices, their stores and their schoolhouses, and bringing them face to face with nature and nature's works. He said that statistics show that sadness and despondency are on the increase and that insanity and suicide are of frequent occurrence ; that these things were largely caused by intense application to study, or to business, or to the pursuit of some specialty ; again, these unfortunate conditions are caused partly by the tendency to crowd the cities to excess. Professor Carleton thought that if more attention was given to such out-door rambles as the one of to-day it would be a great gain for the community. The work of societies like the Institute has a tendency to bring men and women back to nature and to the country ; it is certainly healthful and invigorating both to mind and body.

Mr. John H. Sears spoke of the geological features of the region about Bradford. He referred in some detail to the Montalban or sedimentary rock, known as mica-slate, which appeared there.

Hon. N. A. Horton of Salem offered a cordial vote of thanks to the Trustees of Bradford Academy, to the Principal, Miss Johnson, and to all others whose kind attentions had rendered the day so profitable and pleasant.

This vote was unanimously passed, and the meeting adjourned at about five o'clock. The party returned to Salem by the 5.45 o'clock train, *via* Georgetown and Danvers.

ADJOURNED ANNUAL MEETING.

At the adjourned Annual Meeting of the Essex Institute, holden at its rooms, Oct. 3, 1887, the following by-laws were reported by the committee appointed at the preceding Annual Meeting, and adopted by the Institute.

At the same meeting, lists of Honorary and of Corresponding Members were submitted for election by the Board of Directors, and the Members so nominated were duly elected by ballot.

BY-LAWS.

ARTICLE I. MEMBERSHIP.

SEC. 1. Any person may be elected a member, at a regular meeting, by a majority vote of the members present and voting, the name of such person having been proposed in writing by two members at a previous meeting.

SEC. 2. Any person not residing in the County of Essex, who may be interested in the objects of the Institute, or desirous of promoting its work, may be elected a corresponding member, at a regular meeting, by a majority vote of the members present and voting, upon nomination by the Board of Directors; but corresponding members shall not be eligible to office, or entitled to vote, or liable to assessment.

SEC. 3. Persons who shall have attained an eminent distinction in Science, Literature or the Arts, may be elected honorary members, at the annual meeting, by a majority vote of the members present and voting, upon nomination by the Board of Directors.

SEC. 4. Any member may become a life member, and be exempt from the payment of the annual assessment, by paying the sum of fifty dollars to be added to the invested funds of the society.

ARTICLE II. OFFICERS.

SEC. 1. The officers of the society shall be a President, four Vice Presidents, a Secretary, a Treasurer, an Auditor, and a Librarian, who, with a Council of ten members, shall constitute the Board of Directors.

SEC. 2. The above officers shall be chosen by ballot at the annual meeting of the society, and shall serve for the term of one year, and until the election of their successors.

SEC. 3. The Board of Directors shall have the custody of the buildings, funds, securities and properties of all kinds belonging to the society, and shall have full power to transact all the general business of

the Institute, except the election of members and officers. They may, when they deem it best, refer any matter to the general meeting of the society for its action.

SEC. 4. They shall have power to appoint curators and assistant curators of any department, and they shall appoint such standing or other committees from the active members of the society as they shall deem necessary; but the chairmanship of each of said committees shall always be held by a member of the Board of Directors.

SEC. 5. Upon the nomination of the librarian, the Board of Directors may appoint an assistant librarian.

SEC. 6. The Board of Directors may at any time remove a curator, assistant curator or assistant librarian.

SEC. 7. The Board of Directors shall decide, subject to the control of the society, how and when the general resources of the society, not devoted to any particular department, shall be expended; and shall assign all space or location of specimens for each department, and shall determine all questions that may arise between any of the curators.

ARTICLE III. DEPARTMENTS AND COMMITTEES.

SEC. 1. The Institute shall consist of the following departments:—

HISTORY; SCIENCE; LITERATURE; ART; HORTICULTURE.

SEC. 2. The following shall be the standing committees:

A FINANCE COMMITTEE (of which the president shall be *ex officio* chairman, and the treasurer *ex officio* a member), to have the direction of the funds of the Institute, in accordance with the Act of Incorporation, and of such investments of funds as may be necessary.

SEC. 3. A LIBRARY and PUBLICATION COMMITTEE (of which the librarian shall be *ex officio* a member), who shall make an annual examination of the condition of the library; and who shall have the management of all publications of the society and regulate the manner of their distribution.

SEC. 4. A LECTURE COMMITTEE who shall have charge of all lectures and public meetings, except such as may be held or given for the benefit of a special department of the Institute, and except field meetings.

SEC. 5. A COMMITTEE ON FIELD MEETINGS (of which the secretary shall be *ex officio* chairman) who shall determine when and where field meetings shall be held, and shall have the general management of the same.

ARTICLE IV. MEETINGS.

SEC. 1. Regular meetings shall be held on the first and third Mondays of each month, at the rooms of the Institute. The second meeting in May shall be the annual meeting.

SEC. 2. Special meetings may be called by order of the president, or at the written request of five members. Business to be transacted at a special meeting shall be limited to the subjects stated in the call.

SEC. 3. Field meetings shall be held at such times and places as the field meeting committee may designate.

SEC. 4. The Board of Directors shall meet on the first and third Mondays of each month, and at such other times as they may be called together by the president.

SEC. 5. Five members shall be a quorum for holding any meeting of the Institute, or of the Board of Directors; but any less number, of whom the secretary shall be one, shall have power to adjourn such meeting.

SEC. 6. Officers shall be elected at the annual meeting, but vacancies may be filled by election at any regular meeting.

SEC. 7. All elections shall be by ballot, and by a majority of the members present and voting.

ARTICLE V. DUTIES OF OFFICERS.

SEC. 1. The president, or in his absence one of the vice presidents, shall preside at all meetings of the Institute, and of the Board of Directors. The president shall be *ex officio* chairman of the finance committee.

SEC. 2. The secretary shall give notice of all meetings and record their proceedings; shall notify all members and officers of their election; shall have charge of all papers and documents relating to the general business of the Institute; shall conduct the general correspondence; and at the annual meeting shall report the doings of the Institute during the year. He shall acknowledge the receipt of all donations except those to the library. He shall record in a book kept for that special purpose the by-laws of the society and the names of its members, with the date of their election, and, whenever any alteration, amendment, or repeal of the by-laws is made, the same shall be entered in said book. He shall be *ex officio* chairman of the field-meeting committee, and shall perform such other duties as the Board of Directors shall from time to time designate by vote, and shall act as secretary of such committees as do not choose a secretary from their own number.

SEC. 3. The treasurer shall be *ex officio* a member of the finance committee, and shall keep an exact account of all his receipts and expenditures, and shall submit his report, after examination by the auditor, at the annual meeting.

SEC. 4. The auditor shall audit all accounts of the treasurer, curators and committees, and shall report at the annual meeting.

SEC. 5. The librarian shall be *ex officio* a member of the library committee. He shall receive, and have the custody of, all books and other printed works, maps, charts and diagrams, belonging to the Institute;

shall attend to their arrangement, cataloguing and preservation; shall conduct the correspondence relating to the library and acknowledge all donations thereto; and shall report on its condition at the annual meeting.

SEC. 6. The curators shall have charge of their respective departments, and shall have full power relating to the collection, care and preservation of the specimens or materials relating thereto; provided, however, that any alteration of the general plan or principles of arrangement of any department and the removal of specimens or other material, except for the purpose of exchange, shall be made only with the consent of the Board of Directors, or under such regulations as they may, from time to time, prescribe. Curators shall have charge of all lectures, exhibitions, or entertainments, given for their respective departments. All moneys or funds that may at any time be raised by any curator, or that may come into his hands for the benefit of his department, and the net proceeds of any lecture, exhibition or entertainment under his charge, shall be deposited by him with the treasurer.

ARTICLE VI. ASSESSMENTS.

SEC. 1. An assessment of three dollars shall be paid by every member on admission, and annually thereafter on the third Monday in May.

SEC. 2. No member who shall be in arrears for one year shall be entitled to vote or hold any office; and any member so in arrears, who shall refuse or neglect to pay his dues for six months after being notified thereof by the treasurer, by written notice duly recorded, shall cease to be a member of the Institute.

SEC. 3. The president and treasurer may exempt members from assessments when they may deem it for the interest of the society.

ARTICLE VII. APPROPRIATIONS.

SEC. 1. No member, officer or committee, except the Board of Directors, shall incur any debt whatever in the name of the Institute, unless authorized by a vote of the Society.

SEC. 2. Whenever the Board of Directors shall appropriate any money to be expended by any curator or committee, such curator or committee shall render an account of the same to the treasurer, with vouchers; and the balance, if any, shall be returned to the treasury of the society.

SEC. 3. Whenever any entertainment, lecture, exhibition or concert is given for the benefit of any department of the Institute, the curator or committee having charge of the same shall render to the treasurer a statement of the receipts and expenses incurred, and when all bills are paid, the net receipts of the same shall be turned over to the treasurer and passed to the credit of the department.

SEC. 4. The society will assume no liability for any debt contracted by any curator or committee, unless it shall have been first authorized by a vote of the Board of Directors or the society.

ARTICLE VIII. ROOMS.

SEC. 1. The rooms shall be open to members and the public at such times and under such regulations as the directors may determine.

SEC. 2. Visitors may be introduced by any member.

ARTICLE IX. AMENDMENT OR ALTERATION OF BY-LAWS.

SEC. 1. The by-laws may be altered, repealed or amended by the vote of two-thirds of the members present and voting, at a regular meeting, notice of the proposed alteration, repeal or amendment, having been given in writing at a previous regular meeting.

HONORARY AND CORRESPONDING MEMBERS.

Honorary Members, elected Oct. 3, 1887.

GEORGE BANCROFT,
JAMES FREEMAN CLARKE,
JAMES DWIGHT DANA,
J. WILLIAM DAWSON,
ASA GRAY,
JAMES HALL,
EBENEZER ROCKWOOD HOAR,
OLIVER WENDELL HOLMES,
T. STERRY HUNT,
JOSEPH LEIDY,
J. PETER LESLEY,
FRANCIS PARKMAN,
ANDREW PRESTON PEABODY,
WILLIAM WETMORE STORY,
JOHN GREENLEAF WHITTIER,
DANIEL WILSON,
ROBERT CHARLES WINTHROP.

SPENCER F. BAIRD *was nominated by the committee, but died before election, Aug. 19.*

Corresponding Members, Oct. 3, 1887.

HENRY LARCOM ABBOTT,
ALEXANDER GRAHAM BELL,
JONA. INGERSOLL BOWDITCH,
CHARLES DEANE,
GEORGE EDWARD ELLIS,
MOSES G. FARMER,
JOHN FISKE,
GEORGE LINCOLN GOODALE,
ALPHEUS HYATT,
JAMES PUTNAM KIMBALL,
HENRY CABOT LODGE,
GEORGE W. MARSHALL,
CHAS. SEDGWICK MINOT,
JAMES EDWARD OLIVER,
EDWARD CHARLES PICKERING,
LYON PLAYFAIR,
EDWARD GRIFFEN PORTER,
J. CHALLENGER SMITH,
WINSLOW UPTON,
JUSTIN WINSOR,
GEO. FREDERICK WRIGHT.

LETTERS OF ACCEPTANCE.

Philadelphia,
Dec. 4th, 1887.

TO THE SECY. OF THE
ESSEX INSTITUTE.

DEAR SIR :

I have the honor of receiving your letter of Nov. 28th, accompanied with a Diploma, informing me of my election as an Honorary Member of the Institute. For this distinguished consideration please convey to the Institute my thanks.

Respectfully yours,
JOSEPH LEIDY.

MR. HENRY M. BROOKS,
SECRETARY OF THE ESSEX INSTITUTE.

DEAR SIR :

It gives me great pleasure to acknowledge the receipt of the Diploma of the Essex Institute, announcing my election as Honorary Member. I assure you of my high appreciation of the honor thus conferred on me.

Respectfully yours,
JAMES D. DANA.

New Haven, Dec. 5, 1887.

Concord, Dec. 5, 1887.

SIR,

I have the honor to acknowledge the receipt of your note informing me of my election as an Honorary Member of the Essex Institute.

Permit me to return my thanks through you to that distinguished association for such a gratifying compliment, and to regret that my membership is likely to be of so little value to the Institute.

I am an old man; and while I hope that I have lost no interest in the agencies for human instruction and improvement, I can take little part in them.

Very respectfully,
E. R. HOAR.

MR. H. M. BROOKS, }
Secy. *pro tem.*

Commonwealth of Pennsylvania,
Geological Survey,
J. P. LESLEY, State Geologist,
1008 Clinton Street.
Philadelphia, Dec. 5, 1887.

HENRY M. BROOKS,
SEC. ESSEX INSTITUTE.

DEAR SIR:

Please to present my thanks to the President and members of the Institute for the honor they have done me in electing me an honorary member.

Yours, very respectfully,
J. P. LESLEY.

Jamaica Plain, 5 Dec., 1887.

DEAR SIR,

I beg to acknowledge your obliging communication of 28 November, and to accept with thanks the honor done me by the Essex Institute at its meeting on 3 October.

I am glad, at the same time, to have an opportunity to express my high sense of the excellent service rendered by that association of which I am proud to be an honorary member.

Yours respectfully, F. PARKMAN.
HENRY M. BROOKS, ESQ.
Secy. *pro tem.*

Cambridge, Dec. 5, 1887.

DEAR SIR,

I have great pleasure in accepting the honor conferred on me in my election to honorary membership of the Essex Institute, & it will be my pleasure to render to the Institute any service within my ability.

I am, my dear Sir,
Very truly yours,
A. P. PEABODY.

HENRY M. BROOKS, ESQ.

*Boston, Mass^{ts}.,
90 Marlborough Street.
5 December, 1887.*

HENRY M. BROOKS, ESQ.
Secy. *pro tem.*

DEAR SIR,

It gives me great pleasure to signify my acceptance of the Honorary Membership of The Essex Institute, for which I offer my grateful acknowledgments to the officers and members.

Yours, respy. & truly,
ROBT. C. WINTHROP.

*Herbarium of Harvard University,
Botanic Garden, Cambridge, Mass.,
Dec. 5th, 1887.*

DEAR SIR:

Your notice to Dr. Gray of his election to honorary membership in the Essex Institute finds him unable to thank you for an honor which he would have fully appreciated.

A week ago to-day he was stricken with paralysis, from which he has not recovered, but which, on the contrary, has progressed so far that his condition is now almost hopeless.

This unexpected stroke is a grievous blow to his many friends.

Yrs. very truly,
SERENO WATSON.

HENRY M. BROOKS, }
Secy Essex Inst., }
Salem.

*Jamaica Plain, Mass.,
Dec. 6th, 1887.*

HENRY M. BROOKS,
DEAR SIR—

It gives me much pleasure to accept the appointment of Honorary Member of the Essex Institute, which that body have honored me with.

Very truly yours,

JAMES FREEMAN CLARKE.

Boston, Dec. 7th, 1887.

GENTLEMEN,

It gives me great pleasure to accept the title of Honorary Member of the Essex Institute, which that Institution has conferred upon me.

I am, Gentlemen,

Yours very truly,

OLIVER WENDELL HOLMES.

HENRY WHEATLAND, Esq., President.

HENRY M. BROOKS, Esq., SECRETARY *pro tem*.

Toronto, 7th Dec., 1887.

DEAR SIR:

I have the honor to acknowledge your letter of the 28th Novr, which I have just received: with its enclosed Diploma of Honorary Membership of the Essex Institute.

You will please convey to the Members my best thanks, and the assurance of my high appreciation of the honor they have conferred on me.

With much respect,

Yours truly,
DANIEL WILSON.

H. M. BROOKS, Esq.

McGill College, Montreal, Dec. 8th, 1887.

HENRY M. BROOKS, ESQ. :

DEAR SIR,

I beg leave to acknowledge your communication of Nov. 28th, enclosing Diploma of Honorary Membership of the Essex Institute, and beg leave to tender through you my sincere thanks to the Members of your old and distinguished Society for the honour which they have conferred on me, and which I assure you I very highly appreciate.

Yours sincerely,

J. WM. DAWSON.

Oak Knoll,

Danvers.

12th, 8, 1887.

HENRY M. BROOKS, ESQ. :

Thy note informing me of my election as an honorary member of the Essex Institute has been rec^d. I am glad to be thus associated with an institution of which Essex County has reason to be proud.

Thine truly,

JOHN G. WHITTIER.

HENRY M. BROOKS, ESQ.,

SECRETARY OF THE ESSEX INSTITUTE :

DEAR SIR :

I beg to return through you to the members of the Essex Institute my best acknowledgments and thanks for the honour they have conferred upon me in electing me an Honorary Member of this Society.

It is peculiarly grateful to me as coming from my native town, where the first years of my youth were passed — & for which I retain a warm interest & regard as well as many delightful memories.— It is most pleasant to me to receive this proof that I am not forgotten there, despite my many years of residence abroad.

Yours faithfully,

W. W. STORY.

Palazzo Barberini,

Rome, Decr. 21, 1887.

No. 846 Fifth Avenue—

New York City, Jan. 4, '88.

HENRY M. BROOKS, ESQ.,

SIR :

I have the honor to acknowledge the receipt of yr favor of Nov. 28, '87, announcing that on Oct. 3, I was elected an Honorary Mem-

ber of the Essex Institute, and to beg that you will convey to the members of that body my cordial thanks for their courteous act, and my best wishes for the continued success and usefulness of the Essex Institute.

Very sincerely yours,
T. STERRY HUNT.

Washington, D. C., February 23d, 1888.

ROBERT S. RANTOUL, Esq.
SALEM, MASS.

DEAR SIR:

I pray you to communicate to the Essex Institute my grateful acknowledgments for electing me to be one of its honorary members. I have placed the certificate among the documents I most carefully preserve.

I entreat you to express to the Institute my ever continuing gratitude for this mark of their regard and friendship.

Very sincerely your ancient
& faithful friend,

GEO. BANCROFT.

NEW YORK STATE MUSEUM OF NATURAL HISTORY,

Albany, October 11th, 1888.

HENRY M. BROOKS,
Secretary, etc.

DEAR SIR—

I have received your notice of my election as an honorary member of the Essex Institute, under date of November 28th, 1887. I wish to express my sincere thanks to the members of the Institute, and my high appreciation of the honor conferred upon me by your time-honored Institution for the promotion of science.

It has not been from intentional neglect on my part that I have not sooner acknowledged this honor; but that I was so involved in the work of preparing and publishing my volumes on the Palæontology of New York and other collateral work that I have been compelled to neglect everything else.

I have lately sent to your Institute a package of apologies for my short-comings.

I am very Sincerely and Respectfully Yours,

JAMES HALL.

FOREFATHER'S DAY.

THE THIRD MONDAY OF DECEMBER, the night of the Regular Meeting of the Institute, falling this year on the 19th day of the month, the eve of the landing at Plymouth, the hour was naturally devoted to the Pilgrims, and topics germane to their landing. In this connection a letter was read from the late Thomas Spencer of England, once an early friend and curator, and afterwards a lifelong corresponding member of the Institute, giving an account of a visit made by him to Scrooby, the English home of the Pilgrims, in the year 1869.¹

Some comments were elicited from gentlemen present, befitting the season and the theme, and tracing the early relations established and maintained between the Bay colony and our South Shore neighbors, to whom we owed much of hospitality and encouragement at times, and with whom we were always fortunate in sustaining a friendly confidence and mutual respect. While there has been a marked disposition amongst the descendants of the Puritans to claim the lion's share of the enterprise, financial vigor and organizing and colonizing capacity, which resulted in the ultimate conquest and settlement of the tract between Massachusetts Bay and the Hudson,—between Long Island Sound and the New Hampshire hills,—and while the impression has been repeatedly advanced that the Plymouth colony, well selected and well patronized as it was, could never have extended its borders without our alliance and would have done well were it able to sustain itself at all against the hostile forces of man and nature,

¹ Essex Inst. Bull., Vol. I, pp. 150 to 154.

yet there has never been on this North Shore the slightest disposition to disparage the *personnel* or quality of the Plymouth colony, nor to deny to those noble men who planted there, differing widely from us as they did in their views of church polity, the fullest credit for high purpose, uncalculating self-sacrifice, and a courage and devotion which adversity could not touch.

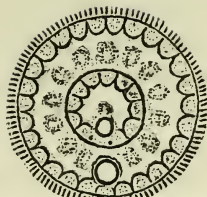
Mr. Vice President Rantoul made some allusion to efforts he had made while abroad with a view to obtain for publication a copy of a manuscript vindication of Hugh Peters, written by the elder Disraeli. He spoke as follows :

The late Benjamin Disraeli, first Earl of Beaconsfield, prefixed to an edition of his father's "Curiosities of Literature," which appeared in 1858, a sketch of that author, Isaac Disraeli, and therein stated, with some commendation of the essay alluded to, that the "last labor of his literary life was to vindicate the character of Hugh Peters." This vindication of Hugh Peters was intended as a supplementary chapter of Isaac Disraeli's "Life and Reign of Charles I," but, the author dying while the book was on its way through the press, was inadvertently omitted and has never appeared in print. The manuscript copy, says Boase and Courtenay's "*Bibliotheca Cornubiensis*," was still in existence in 1875, and in the possession of Rt. Hon. Benj. Disraeli ; all of whose manuscripts were left by his will to Conigsby Disraeli, his nephew.

The character and reputation of Rev. Hugh Peters, a pastor of our first church, 1636-1641, afterwards decapitated in London for his activity under Cromwell, in some sense belong to Salem, and in some sense also to the Essex Institute, for we have had the good fortune to come into possession of what remains of the old meeting house in which he ministered, the carefully preserved frame of which becomes every day an object of more general interest.



1



2

AN ANDEAN MEDAL.

BY SAMUEL GARMAN.

THE piece of silver here described and sketched was obtained by a friend of the writer in the interior of Peru, from a native who claimed to have taken it, in the neighborhood of Cuzco, from the mouth of a mummy. Its peculiar design and the workmanship make it an object of curiosity to those interested in what pertains to the early Peruvians. This notice is given it in hope that it may prove of some account, in connection with other ornamentation, in researches concerning the metal workers of the lands of the Incas. My friend saw no reason to doubt the story of the man from whom he got it. For myself, I can only vouch for my friend, the description, and the sketches. The latter were made by pressing the disk against damp paper on which the points in relief were afterward traced in ink.

The medal is a nearly round silver disk an inch and one sixteenth in diameter and not far from one twenty-fifth of

an inch in thickness. On the edge it is smooth though rather uneven, being in some places slightly rounded, and in others more sharp or angular. Foldings in the metal, such as would be produced by hammering, appear here and there on the surface. The faces are not quite true planes, and the curves in outline, as in sculptures, are not quite regular but nearly so. On the face the ornamentation is all excavated or depressed, represented by the lines and dots in figure 1. The other side, figure 2, has the lines incised while the raised portions, marked by the dots, are caused by the depressions on the front. Except in case of the concavities of the face and the convexities of the back, which were formed by the same strokes, each line or mark on either side was independently engraved.

The most ornate side, the face or front, fig. 1, has a shallow round depression in the centre, circumscribed by a circle an eighth of an inch in diameter. Around the circle there are four semicircles, arranged so as to remotely resemble the petals of a flower, and within each there are four or five short lines extending outward from the circle. Outside of these semicircles there is a second circle, nearly three-eighths of an inch in diameter, around which are placed fourteen elongate depressions, separated and enclosed by lines that curve around the outer and larger end of each. A larger circle fifteen-sixteenths of an inch across is cut near the edge; at the inside of this there are twenty-seven subequal, subround depressions, each of them enclosed by a curved line. Radiating from the large circle to the edge of the disk there is a border formed of a hundred and ten short lines. Each of the lines in this milling was made in part by a tool having a comparatively broad edge and its excavation was then continued to the margin by a narrower implement.

Turning to the back, fig. 2, we find the convexities pro-

duced in forming the depressions of the front to be very noticeable, and to determine the design. A small circle is not introduced in the centre; the flower-like figure is absent. The inner circle on this side is a trifle more than three-eighths of an inch in diameter. About the inner side of it there is a series of twelve small, more or less irregular semicircles and from its outer side fourteen elongate convexities radiate. The circle near the edge is a little more than seven-eighths of an inch in diameter; like its counterpart on the face it has twenty-seven semicircles at its inner side and from the outer the short lines of the milling, a hundred and sixteen in number, extend to the margin. In this border the lines were not made with the tool used on the front; they are somewhat crescent-shaped, deeper along the shorter edge.

The two holes that disfigure the piece were made after the engraving was completed, otherwise they would not have interfered so much with the design. The smaller, near the centre, appears to have been made some time before the other; its burr, on each side, was hammered down flat, while that of the larger and later was left prominent, as would hardly have been the case if the larger had been made first, or even if both had been made by the same hand. These holes were formed by some tapering instrument worked from both sides, the utensil throwing up a rim on each and leaving the hole wider at each surface. Neither of the perforations is quite round. Their purpose must have been for attachment. Dissatisfaction with the smaller, so near the middle of the disk, probably furnished a reason for the existence of the larger.

Differences in shapes and depths and occasional evidence of slips of the graver in cutting prove that each line and each depression was made separately. To make the concavities the metal was driven down upon a hard but yield-

ing material, as silver, lead, or, perhaps, hard wood, by an implement with a blunt rounded extremity.

We look in vain for evidence of indecision in the design. Spaces or areas are subequal and similar in outline. The workman had just room enough for his last strokes,—neither too much nor too little. He must have marked out the pattern before engraving; possibly had done his experimenting on other pieces. The only points at which space is left over, or where crowding occurs, are in the border; and there the changes in the inclination of the lines indicate haste or carelessness rather than uncertainty.

The work is of the nature of that done by persons having too much leisure, who make something in order to pass the time. It should be placed with the peculiar furniture, strange ornaments and wonderful puzzles wrought by soldiers, sailors, convicts and others, while at a loss for something to do. This is a class of productions not without importance in art-evolution; since it is no doubt true that under conditions in some respects similar, in hours of leisure without pressure from taskmaster or prospect of reward, restless fingers among the aborigines have brought into existence a great deal of what the man of earlier times and ruder appliances possessed of the ornamental in art. The object of this note being simply to bring the medal to the notice of students interested in such matters, considerations of significance and antiquity are left to them.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 20. SALEM: APR., MAY, JUNE, 1888. Nos. 4-6.

AN ANNOTATED CATALOGUE OF THE MOLLUSCA OF IOWA.

BY CHARLES R. KEYES.

THE following catalogue of the mollusca of Iowa is based chiefly upon collections personally made in various portions of the state, supplemented by liberal accessions received through exchange. With three or four exceptions, which have been duly credited, only such species have been here introduced as have passed under personal examination; and although there are undoubtedly some species occurring within the limits of the state, but which have not as yet been noted, it is presumed that the list will present a reasonably complete résumé of the regional observations upon this faunal group. There are here enumerated one hundred and fifty-one species, distributed among forty-four genera and sixteen families; while there are thirty-two species recorded from the löss of the state.

No attempt has been made to deal with the numerous and complex questions of synonymy; not, however, for reason of any inappreciation or under-estimation of their full

significance and importance, but on account of an entire inappropriateness in a paper of this character of such prolix discussions. That there exists a burdensome and extensive synonymy in some of the molluscan groups, and particularly in *Unionidæ*, no student of fluviatile and lacustrine mollusca will for a moment question; in fact, so manifest is it, to everyone who has given the subject even a casual consideration, as to at once render apparent the cogent necessity of a careful and complete revision of the American species of this family. The wide geographical distribution of some species of *Uniones* and the concomitant changes of environment may readily be referred to as among the chief causes of local variation of species. Notwithstanding the careful and conscientious labors of some of the earlier American writers on this group of mollusks, the question of geographical distribution did not at that time receive the attention that it has subsequently; and therefore species were often based upon superficial characters which are relatively unimportant as classificatory criteria.

Numerous references have been made in the following notes to the occurrence of certain species in the löss; and there is appended a list of the molluscan forms now known from the post-pleiocene of Iowa. Most of the species found fossil in this deposit are at the present day living in the region under consideration; the exceptions are notably *Patula strigosa* Gould, *Vallonia pulchella* Müll., *Helicina occulta* Say, etc.,—abundant and characteristic forms. The first of these is now found no nearer than the Rocky mountains; the other two do not occur in central and other portions of Iowa where the fossils are very abundant; however, the former is present in a number of localities in the eastern part of the state, but the latter is confined to two very limited areas, and is on the verge of extinction. The

great abundance in the löss of certain species now rare or extinct in those localities is very significant as illustrative of continuous change in the geographic distribution of species. The relation of these fossils to the living representatives in the same area is also of great interest as being indicative of the climatic conditions at the time of the deposition of the löss. As has been shown by McGee and Call¹ the forms occurring in this deposit are all depauperate, attesting a diminution of vitality, doubtless due to a much lower temperature than at present. It appears from the data at hand that, in Iowa, among the lamellibranchs especially, and to a less noticeable degree in the gasteropodous groups, the distribution of the species geographically is very peculiar. Among the *Unionidæ* alone, thirty-five species apparently occur only in the eastern part of the state, eight only in the western, while twenty-four are generally distributed: of the latter, one is extremely rare in western, and three in eastern Iowa. Independent of its zoölogical interest this peculiar distribution of the mollusca of Iowa is geologically very suggestive as affording evidence of certain phenomena during glacial times. Iowa forms a portion of an area, the molluscan fauna of which has been derived preglacially from the northwestward. The recent rich discoveries of fresh-water mollusca in the Mesozoic and later deposits of the Upper Missouri region have indicated the probable origin of the fauna now living within the limits of this and contiguous states. In the fresh-water cretaceous and tertiary strata just referred to, are found the prototypes of the *legamentinus*, *gibbosus*, *undulatus*, *ventricosus*, *ellipsis* and other groups of the *Unionidæ*; while *Planorbis*, *Campeloma*, and other gasteropodous genera were also well represented by forms closely allied

¹ Am. Jour. Sci., Sept., 1882, Vol. XXIV.

to those now living. In America, unmistakable *Uniones* appear in the Jurassic, or, if the determinations of Hall are correct, may even date back to the Devonian. In the Laramie beds of the northwest and in the strata of somewhat later date there occur besides *Unio*, *Planorbis*, and *Campeloma* the following genera: *Limnophysa*, *Gyraulus*, *Physa*, *Bulinus*, *Goniobasis*, *Vivipara*, *Valvata*, and some land forms. The conclusions presented would point to a remote origin of the present facies of the molluscan fauna now living in the area under consideration; and with the material now at hand important results await the biologist and palæontologist in this field of investigation.

The occurrence in Iowa of pearls in some of the fluvial bivalves has recently been made known; the principal localities being in Dallas county, where in the swift current of the rapids of the Raccoon river below Van Meter are found in abundance, *Unio wardii* Lea, and other species rare elsewhere in the state. Of more than two hundred specimens of *Uniones* collected here the majority contained from three to a dozen or more pearls, some of which were quite large; the most of them, however, were rather small, yet quite perfect and symmetrical. A few of those taken from *Unio wardii* were of a delicate rose tint, while those from *U. gibbosus* were dark purple. The other species affording pearls were *Unio rectus* Lam., *U. fragosus* Conrad, *U. æsopus* Green, and *Margaritana rugosa* Barnes. The habitat of these pearl-bearing species appears to be very different from that referred to by Kuchenmeister who found pearls most abundant in mollusks living in the still parts of streams. Among the collections are a number of monstrosities which present curious phases of molluscan life. Many of these pathologic forms are evidently the result of injuries received; but others are doubtless due to unfavorable development early in life. Some of the most

remarkable examples of the former are illustrative of the severe injuries that these mollusks may receive and yet survive, and even attain a normal size, while of the latter group of abnormalities the transposition of the teeth in the valves of *Unio* is perhaps the most notable; and probably arises from the same peculiar embryonal conditions that have produced dextral shells among sinistral univalves and *vice versa*.

Thanks are tendered Prof. R. E. Call for the verification of some of the *Uniones*.

GASTEROPODA.

Family SELENITIDÆ.

Macrocyclus concava Say. Iowa City; rather common; Muscatine, Burlington and other localities in eastern Iowa. The distribution of this species is chiefly east of the Mississippi river; its western limit being the eastern portions of Iowa and Missouri.

Family LIMACIDÆ.

Limax campestris Binn. Des Moines, Iowa City, Bonaparte: abundant. A widely distributed species, and doubtless occurs throughout the state.

Zonites arboreus Say. Abundant everywhere.

Zonites nitidus Müller. The only locality in Iowa from which this species has been obtained is Hardin county.

Zonites viridulus Menke. Northern and eastern Iowa: rather common.

Zonites indentatus Say. Iowa city is the only locality in the state where this species has been collected.

Zonites minusculus Binney. Johnson, Scott and Muscatine counties: quite common.

Zonites fulvus Draparnaud. Eastern Iowa: not common. The six species of *zonites* here enumerated all have

a wide distribution, being found in nearly all of eastern North America, and three of them are also circumpolar. The wide geographical distribution of certain species of mollusca, especially land forms among which it is so uncommon, points to a high antiquity for the group; and in this instance, it is fully corroborated by palæontological evidence, in the occurrence of the subgenus *Conulus*, to which *Z. fulvus* belongs, in the Carboniferous shales of Nova Scotia.

Family PHILOMYCIDÆ.

Tebennophorus carolinensis Bosc. Common throughout the state.

Family HELICIDÆ.

Patula alternata Say. Abundant everywhere in damp woodland; often gregarious in hibernation. The löss in the vicinity of Des Moines furnishes depauperate shells of this species and also of *P. strigosa* with the red markings still visible. A remarkable feature of the molluscan shells occurring in this deposit throughout the state is a peculiar chalky whiteness by which they are easily distinguishable from "dead" shells of the same species now living in the region.

Patula perspectiva Say. Common at Iowa City and elsewhere in eastern Iowa.

Patula striatella Anthony. Abundant in the central and eastern portions of the state. This species is also very abundant in the löss at Des Moines.

Microphysa pygmæa Draparnaud. Polk, Johnson, Scott counties: a minute but rather abundant species, formerly more generally known under Morse's name *Punctum minutissimum*.

Helicodiscus lineatus Say. Rather common in central

and some portions of eastern Iowa. Also fossil in the löss.

Strobila labyrinthica Say. A minute species very generally distributed and in suitable places occurring quite abundantly.

Stenotrema hirsutum Say. Rather common in many localities; rare in others. When this species occurs abundantly its congener, *S. monodon*, appears to be rare, and *vice versa*.

Stenotrema monodon Rackett. Generally distributed, but only locally common. The variety *leai* is also common in Scott, Johnson and contiguous counties. This species occurs quite abundantly in the löss; as has been referred to by McGee and Call (*loc. cit.*) the löss forms of this species "present some important differential characters; the apices being more elevated, the whorls more convex, and somewhat loosely coiled with the apertures more lunate than in recent specimens. The reflected portions of the lip and the parietal teeth are also less calcareous; in all other respects they correspond generally with the variety of the recent form known as *S. monodon* var. *leai*."

Tridopsis palliata Say. Bonaparte, Ft. Madison, Burlington: not common. Until very recently, this species was unknown in Iowa.

Tridopsis appressa Say. This species has recently been collected at Burlington; but it is quite rare.

Mesodon albolabris Say. This species appears to be of very rare occurrence in eastern Iowa; but in the central portion of the state it is one of the most abundant land forms; and especially is it common in the vicinity of Des Moines, where on warm rainy days in the woodland covering the bluffs it is found in great profusion feeding upon mushrooms; a dozen or more snails often being collected about a single tuft of these plants.

Mesodon multilineatus Say. Very common. A form having the spire much elevated occurs along the Iowa river above Coralville, Johnson county. This species prefers the marshy woodland and mud flats adjacent to the water courses where it often occurs in great abundance. A small woodland pool near Des Moines afforded hundreds of living specimens of this species, which had been borne thither a short time previous, during a rain shower, by the torrent water of a small creek. In hibernation this species is gregarious, several dozen often being found together in a decayed stump, or in a tuft of grass.

Mesodon thyroides Say. Davenport, Muscatine and eastern Iowa : not usually common. In June, 1886, a number were collected at the base of the high sandstone cliffs, at "Wild Cat Bend" of Pine Creek in Muscatine county.

Mesodon clausus Say. In Iowa generally this species is not common ; except perhaps at Des Moines where it occurs in abundance. In this locality the most favorable time for collecting this species has been found to be on dry summer days, especially during long drought-periods when the collecting of *Helices* is generally extremely laborious and barren in its results. The soil in the woodland at this time becomes very dry even in localities that are usually comparatively moist ; many plants growing in these localities now wither and die ; to the stems and leaves of those plants, which survive through the season are found attached these snails, often so abundantly that fifty or a hundred have been obtained in a short time ; in fact the most profitable collecting of this species experienced. During the day the snail forms around the periphery of the shell aperture an epiphragm which also secures the shell to the leaf. The dew at night sufficiently moistens the plant to allow the animal to move from place to place.

Mesodon profunda Say. Central and eastern Iowa: quite common; often associated with *M. clausus* and *M. albolabris* on moist hillsides, and also clinging to the trunks of trees.

Vallonia pulchella Müller. Common at Iowa City and elsewhere in eastern Iowa. In the central portion of the state it has not as yet been found living, though it occurs quite abundantly in the löss of that region.

Family PUPIDÆ.

Pupa pentadon Say. Iowa generally, but not very common.

Pupa fallax Say. Iowa City: not common. This species is said to range westward to Nebraska and will doubtless be found in other Iowa localities.

Pupa armifera Say. Davenport, Burlington, Des Moines: very abundant.

Pupa contracta Say. Quite common throughout the state.

Pupa corticaria Say. Eastern Iowa: rare. This species together with *P. armifera*, *P. pentadon*, *P. muscorum* and other congeneric forms are found in the löss. *P. muscorum*, though having a wide geographical distribution, has not yet been recognized living in the state.

Vertigo ovata Say. A *Vertigo* occurring at Iowa City has been referred to this species, but its specific identity in not perfectly satisfactory.

Vertigo gouldi Binney. Not uncommon in the eastern portion of the state.

Family STENOGYRIDÆ.

Ferrussacia subcylindrica L. Des Moines, Forest City, Iowa City and elsewhere: rather common.

Family SUCCINIDÆ.

Succinea ovalis Gould. Abundant. In the northern portion of the state it is replaced by *S. higginsi*, from which it is often with difficulty distinguished.

Succinea obliqua Say. Abundant everywhere. At Des Moines the variety *totteniana* is associated with this species. During periods of drought the habits of *S. obliqua* are similar to those of *Mesodon clausus* as already given.

Succinea avara Say. Common. This species and *S. obliqua* are abundant in the löss throughout the state.

Succinea higginsi Bland. Common in northern Iowa.

Family AURICULIDÆ.

Carychium exiguum Say. Iowa City, Des Moines: common. Many shells of this minute species are often found abundantly in the drift-wood along the streams.

Family LIMNÆIDÆ.

Linnæa stagnalis Linnæus. Spirit and other lakes of northern Iowa, where it is often exceedingly abundant.

Bulinnea megasoma Say. Winnebago and adjoining counties: common in many of the ponds and pools.

Limnophysa reflexa Say. Dallas, Dickinson, Hardin, Johnson, Des Moines counties: everywhere abundant. A very large form occurs in great numbers in the prairie ponds of Dallas county. In a marsh a few miles north of Des Moines is found typical *L. zebra* Tryon; from which there is a perfect gradation to typical *L. reflexa*. From near Dubuque has been received a variety that is nearly black. These varietal differences may be regarded as the resultant of different conditions of environment.

Limnophysa palustris Müller. Twin Lakes (Hancock county). Lake Okoboji furnishes the variety described as *L. nuttalliana*.

Limnophysa desidiosa Say. Abundant everywhere.

Limnophysa caperata Say. Abundant in the ponds and prairie marshes throughout the state.

Limnophysa pallida Adams. A few specimens, collected in Johnson county, have been referred to this species. It is said to be very abundant at Muscatine.

Limnophysa humilis Say. Des Moines, Cedar Rapids and elsewhere: common in the marshes.

Physa gyrina Say. Everywhere abundant. This species was described from specimens collected in Bowyer creek near Council Bluffs; it has a very wide geographical distribution and presents a great variety of forms. Typical *P. hildrethiana* has been collected in abundance in the prairie ponds of Dallas county; and the form described by Lea as *P. elliptica* occurs in great numbers in some of the ponds near Des Moines.

Physa heterostropha Say. Abundant everywhere throughout the state.

Bulinum hypnorum Linnæus. Winnebago county and northern Iowa generally: common.

Planorbella campanulatus Say. Twin Lakes, Hancock county; Spirit Lake, Dickinson county: quite common.

Helisoma trivolvis Say. Spirit Lake, Forest City, Des Moines, Fort Madison, Ottumwa: abundant.

Helisoma bicarinatus Say. Muscatine, Iowa City, Spirit Lake: common.

Menetus exacutus Say. Common in the prairie ponds of Central and eastern Iowa.

Gyraulus deflectus Say. Lake Okoboji; ponds of Polk and Scott counties.

Gyraulus parvus Say. Common in Polk and Dickinson counties, and Iowa generally.

Gyraulus albus Müller. Davenport, Des Moines: rather common.

Segmentina armigera Say. Hardin and Scott counties : rather common.

Ancylus diaphanus Hald. Eastern Iowa generally : common.

Ancylus tardus Say. Dallas county. Both species are found attached to stones or shells of *Uniones* in ponds or streams.

Family VALVATIDÆ.

Valvata tricarinata Say. Abundant in ponds, throughout the state.

Valvata bicarinata Lea. This form has been collected at Iowa City and Spirit Lake and doubtless occurs in other localities in the state. A large series shows a complete gradation into *V. tricarinata* and indeed may be regarded as synonymous.

Family VIVIPARIDÆ.

Vivipara intertexta Say. Common in the ponds and bayous adjacent to the Mississippi river, but has not as yet been found in the interior of the state. This species ranges from Louisiana north to White Bear Lake, Minnesota, where it is reported by Mr. Grant as very common.

Vivipara contectoides W. G. B. This species has been collected in the streams of eastern Iowa, but does not appear to be common.

Campeloma subsolidum Anthony. Davenport, Burlington, Fort Dodge and elsewhere : abundant. In the Mississippi river near Clinton very large specimens have been obtained, many of them exceeding in size and weight any *C. ponderosum* examined. The variety *C. rufum* Hald. occurs abundantly in the Cedar river.

Campeloma decisum Say. Abundant ; appears to graduate into *C. subsolidum*.

Campeloma obesum Lewis. This species is found abundantly in a small creek in Johnson county, a few miles south of Iowa City.

Lioplax subcarinata Say. Iowa, Cedar and Mississippi rivers : common.

Family RISSOIDÆ.

Bythinella obtusa Lea. Abundant in the bayous adjacent to the streams at Des Moines, Iowa City and elsewhere ; in some localities it appears to be quite rare.

Somatogyrus depressus Tryon. This species was described by Tryon from specimens obtained from the Mississippi river at Davenport. It occurs abundantly at Eldora, Iowa City and Des Moines.

Somatogyrus subglobosus Say. Abundant in many of the ponds and streams throughout the state.

Amnicola limosa Say. Spirit Lake, Iowa City. It is widely distributed through Iowa, Minnesota and contiguous states ; and has been collected by Mr. Grant in the Vermillion river, Turner County, Dakota. *A. porata* doubtless occurs also in the state.

Amnicola cincinnatensis Anthony. The most abundant and widely distributed species of the genus found in the state.

Amnicola orbiculata Lea. Specimens collected in the ponds of Johnson and Polk counties have been referred to this species.

Pomatiopsis lapidaria Say. Eldora, Des Moines and Iowa City : not common.

Family HELICINIDÆ.

Helicina occulta Say. This species was described by Say from fossil specimens ; and, previous to 1876, was known only in that state ; in that year it was discovered

in abundance living near Iowa City, and later in Hardin county. Its distribution at Iowa City is very peculiar, and very limited in extent. The locality is on Turkey creek four miles north of Iowa City. It is a steep hillside on the south side of the creek, and covered with a dense growth of ferns and other plants. Here confined within an area scarcely forty yards in extent this little species flourishes so abundantly that several hundreds have been collected in a short time. Beyond this little secluded spot not a single specimen is found living, except in Hardin county where numbers have been collected in a similar situation. This species is one of the most abundant and characteristic fossils of the löss.

Family STREPOMATIDÆ.

Pleurocera subulare Lea. This species as also *P. lewisi* which is very closely allied if not identical, is found abundantly in the Iowa river where it is usually attached to stones in shallow water. It occurs quite commonly in the muddy bed of the Minnesota river about Ft. Snelling. In central Iowa "dead" shells are common along the streams but as yet living ones have not been found.

Goniobasis cubucoides Anthony. This species occurs abundantly in the Raccoon river in Dallas county.

LAMELLIBRANCHIATA.

Family CORBICULADÆ.

Sphærium stamineum Conrad. Common, but not as generally distributed as the next.

Sphærium striatinum Lamarek. Abundant everywhere in creeks and rivers.

Sphærium rhomboideum Say. Common in some localities; rare in others.

Sphærium partumeium Say. Common, and even abundant in many localities.

Sphærium solidulum Prime. Des Moines, Iowa City, and elsewhere.

Sphærium sulcatum Lamarck. Common, everywhere.

Sphærium jayanum Prime. This species is found in abundance in Kenneday's Lake near Des Moines, where several hundred specimens of this hitherto rare form were collected.

Psidium abditum Hald. Common in the ponds and streams of central Iowa.

Family UNIONIDÆ.

Anodonta corpulenta Cooper. Eastern Iowa: not common. Fine examples have been collected at Davenport, and also in the Rock river in the northwestern part of the state.

Anodonta danielsii Lea. This species is entered here upon the authority of Prof. R. E. Call who has reported it from Fremont county.

Anodonta decora Lea. Shells referable to this species have been collected in various localities in eastern Iowa. but it approaches so closely in some of its phases other members of the *grandis* group that it is often almost impossible to separate the forms satisfactorily.

Anodonta edentula Say. Generally distributed throughout the state but nowhere very common. The Raccoon river in Dallas county has afforded this species in greater abundance than any other Iowa locality.

Anodonta ferrussaciana Lea. Common; especially in the northern portion of the state. Mr. Grant has supplied specimens from the Vermillion river at Parker, Turner county, Dakota, which is the most northwesterly locality yet reported for this species.

Anodonta grandis Say. Abundant everywhere especially in the ponds and bayous adjacent to the water-courses. This species though never figured, is well known to collectors generally.

Anodonta imbecilis Say. Common in many localities of eastern Iowa. In August, 1885, this species was found abundantly in the Minnesota river at Ft. Snelling.

Anodonta ovata Lea. Specimens referred to this species are abundant in Okoboji and Spirit lakes, Dickinson county.

Anodonta plana Lea. Not uncommon in the Des Moines river and elsewhere. This is another of the *grandis* group; and it is extremely doubtful whether this form should be specifically separated from the type of the group.

Anodonta suborbiculata Say. Abundant in numerous localities in eastern Iowa.

Anodonta wardiana Lea. Common in the Beaver creek and Des Moines river near Des Moines.

Margaritana calceola Lea. The distribution of this species is more general east of the Mississippi river, but has been collected in various localities in eastern Iowa. *M. deltoidea* Lea is regarded as synonymous with this and hence no mention is made of that form which has been reported from certain localities in the state.

Margaritana complanata Barnes. Abundant: Rock river, northwestern Iowa, Shell Rock river in Floyd county, Mississippi, Iowa, Des Moines and Missouri rivers. This is the largest of the genus occurring in the state; it is usually symphynote, but specimens from the Shell Rock and other localities do not possess the alate dorsum; the latter variety is generally much heavier than the former.

Margaritana confragosa Say. This species does not appear to be common in any Iowa localities. It is found as far north as Fort Snelling, where it has been collected in

the Minnesota river about one mile above the railroad bridge.

Margaritana hildrethiana Lea. Des Moines river, rare; Iowa river, common at Iowa City where many were noticed among the shells of other *Unionidæ* brought out of the stream by muskrats. It is often found in large numbers beneath submerged slabs of limestone which occur abundantly along this river.

Margaritana marginata Say. Apparently rare throughout the state, but occurring in the Raccoon river in Dallas county more abundantly than elsewhere.

Margaritana monodonta Say. Eastern Iowa: not common. Davenport and other places on the Mississippi river.

Margaritana rugosa Barnes. Shell Rock river; Des Moines river at Des Moines, Ottumwa and Bonaparte; Mississippi, Cedar and Iowa rivers. Quite common in the Raccoon in Dallas county.

Unio æsopus Green. Des Moines river rather rare; eastern part of the state common. Those at Des Moines are usually found in sand and have the epidermis bright yellow, or straw color, while those obtained in eastern Iowa are much darker, especially old specimens which are very dark brown, presenting a marked contrast with the bright reddish animal portions.

Unio alatus Say. Abundant in many of the streams of eastern Iowa, but not as yet reported from the central portion of the state. This is one of the few bisymphynote shells occurring in the Upper Mississippi region. It often attains a large size — eight or ten inches in length — and is correspondingly heavy and thick; the young shells are comparatively thin and fragile, and closely resemble *U. lævissimus* Lea.

Unio anodontoides Lea. Abundant in eastern, rare in the central, part of the state. This species has a wide dis-

tribution; from New York to Georgia; to Texas and as far north as the Minnesota river. Shells brightly rayed with green are found associated with those in which the rays are obsolete or entirely wanting. Some of its forms closely approach those of *U. luteolus* Lam.

Unio capax Green. Rare: Mississippi river, Burlington, "Muscatine" (Witter); Iowa river at Iowa City. This form is closely allied to *U. ventricosus* Barnes.

Unio coccineus Lea. Common. Shells from the Iowa and Raccoon rivers are often beautifully rayed; some of those from the latter stream also have a delicate roseate nacre. Several specimens collected at Des Moines correspond to the form described by Ward as *U. gouldianus*.

Unio cooperianus Lea. Little is apparently known of this species in Iowa. It ranges from the "Ohio river at Cincinnati to the Mississippi river at Muscatine" (Call).

Unio cornutus Barnes. Abundant in the Iowa and Mississippi rivers. Many from Iowa City are so closely rayed with dark green as to entirely obscure the lighter portions of the epidermis; while some from the northeastern part of the state are uniformly yellow, and devoid of rays.

Unio crassidens Lamarck. Iowa and Mississippi rivers: rare.

Unio donaciformis Lea. Iowa, Mississippi and streams of eastern Iowa generally: common. Ranges north to Fort Snelling. *U. zigzag* Lea and this species are synonymous.

Unio dorfeuillianus Lea. Abundant at Iowa City. This species is so closely allied to *Unio pustulosus* that it is often with difficulty that the two forms are distinguished. Occurs also in the Minnesota river at Fort Snelling.

Unio ebenus Lea. Common in the eastern part of the state.

Unio elegans Lea. Very abundant at Iowa City. "Rather rare; Mississippi and Cedar rivers" (Witter). It ranges as far north as the Minnesota river,

Unio ellipsis Lea. Common in eastern Iowa, Mississippi river at Keokuk, Fort Madison, Burlington, Muscatine; Iowa river at Iowa City.

Unio fragosus Conrad. Des Moines river, rare; Raccoon river, common; some of the largest and finest specimens from Iowa are from the latter stream. Also abundant in the Iowa river at Iowa City.

Unio gibbosus Barnes. Des Moines, Skunk, Shell Rock, Iowa, Cedar and Mississippi rivers: common. *U. archior* is only a variety having a white nacre.

Unio gracilis Barnes. Eastern Iowa: common.

Unio graniferus Lea. Rare. Collected in the Mississippi river at Muscatine, May 29, 1886.

Unio higginsii Lea. The type of this species was collected near Muscatine and described in the Journal of the Academy of Natural Sciences of Philadelphia, 2nd series, volume V. It is certainly very closely allied to, if not identical with, *U. orbiculatus* Hald.

Unio irroratus Lea. Eastern Iowa: rare.

Unio lachrymosus Lea. Not uncommon at Des Moines, Iowa City, and Burlington. Very abundant in the Des Moines river at Bonaparte, Van Buren county. It is often received under the name of *U. asperrimus* which is a synonym.

Unio lævissimus Lea. Common at Iowa City and elsewhere in the eastern part of the state. This is one of the few alate species occurring in this region.

Unio ligamentinus Lamarck. One of the most abundant species occurring everywhere throughout the state. Its most northern locality known is the Rum river above Anoka, Minnesota, and from there it is said to range to western New York, northern Alabama and southern Kansas. This is one of the *Uniones*, that is sometimes gregarious; hundreds often being found together in a

space of a few yards. A notable instance of this kind was noted in the Des Moines river, a few miles north of Des Moines. The situation was at the lower extremity of an extensive sandbar, where the water during the summer is usually from three to five feet deep, and with little or no current; notwithstanding the close proximity of the sandbar, the bed of the stream is muddy. Here thousands of mussels lie buried in the mud, so closely as nearly to touch one another. Every haul of the rake — a large garden rake, very suitable and serviceable in collecting of this kind — affords a half dozen or more specimens, and in a very short time a bushel or more of *Uniones* have been obtained. The species represented in order of their relative abundance, are: *Unio ligamentinus*, *U. luteolus*, *U. ventricosus*, *U. pustulosus*, *M. complanata*, *U. undulatus*, *A. grandis*, *U. rubiginosus*, *U. gibbosus*, besides eight or ten other species in fewer numbers, and *Campeloma sub-solidum* in profusion.

Unio lunulatus Pratt. This form is described in the Proceedings of the Davenport Academy of Sciences, volume I, from specimens collected in the Mississippi at Davenport. It is very closely allied to *Unio lachrymosus* Lea, with which according to Call it is perhaps synonymous.

Unio luteolus Lamarck. Everywhere abundant. A variety having a remarkably thin and fragile shell, which externally is scarcely distinguishable from an *Anodonta* associated with it, is found in abundance in Lake Minnetonka, Minnesota.

Unio metanever Rafinesque. Abundant in the streams of eastern Iowa, but in the central part of the state it is replaced by a lighter colored and more compressed variety, *U. wardii* Lea, the latter being very rare in the eastern portion of the state.

Unio multiplicatus Lea. Mississippi river: rare. Replaced in the interior streams of the state by *U. plicatus*, and *U. undulatus*.

Unio orbiculatus Hildreth. Mississippi river: not common.

Unio parvus Lea. Generally distributed in the streams throughout the state, but not abundant.

Unio phaseolus Hildreth. This species has been reported from the state but no specimens have been personally examined.

Unio plicatus LeSueur. Abundant at Iowa City, and in eastern Iowa generally. In the Des Moines and other streams of the central portion of the state it is replaced by *U. undulatus*.

Unio pressus Lea. A few specimens taken in the Des Moines river at Des Moines: very rare.

Unio pustulatus Lea. Rare in the Mississippi and streams of northeastern Iowa; common in the Des Moines river at Bonaparte, Van Buren county.

Unio pustulosus Lea. Des Moines and Raccoon rivers: common. In these streams the variety described as *U. schoolcraftii* is quite abundant.

Unio pyramidatus Lea. Southeastern Iowa: rare.

Unio rectus Lamarck. Common in the streams of nearly every portion of the state. Specimens having a beautiful salmon colored nacre have been collected in the Rock and Des Moines rivers.

Unio rubiginosus Lea. Abundant in the Rock, Des Moines and Raccoon rivers; rare in many localities.

Unio schoolcraftii Lea. Abundant in the Raccoon, Des Moines and Iowa rivers. Gradates into *U. pustulosus*, with which it is undoubtedly synonymous.

Unio securis Lea. Common in the Mississippi and its tributaries of eastern Iowa.

Unio spatulatus Lea. Rare in many of the streams of eastern Iowa, common in the Raccoon river in Dallas county.

Unio subrostratus Say. Iowa City, Muscatine and elsewhere in eastern Iowa. Known to Iowa collectors under Conrad's name *U. mississippiensis*. Prof. R. E. Call's careful studies of this group have led him to the following conclusions relative to the synonymy of this species.

1831. *Unio subrostratus* Say.

1834. *Unio nashvillensis* Lea.

1850. *Unio mississippiensis* Conrad.

1852. *Unio nigerrinus* Lea.

1859. *Unio rutervillensis* Lea.

1868. *Unio topekænsis* Lea.

Unio tenuissimus Lea. Rare, but not uncommon in the Iowa river at Iowa City.

Unio trigonus Lea. Des Moines, Iowa, Cedar, Mississippi and other streams : common.

Unio triangularis Barnes. Eastern Iowa : rare.

Uniotuberculatus Barnes. Generally distributed throughout the state, but nowhere abundant.

Unio undulatus Barnes. Abundant in central and western Iowa ; represented by *U. plicatus* in the eastern part of the state.

Unio ventricosus Barnes. Rock river, northwestern Iowa : common in central and western Iowa ; the variety *occidens* being more common in the eastern part of the state.

Unio verrucosus Barnes. Eastern Iowa : not common.

Unio wardii Lea. Des Moines river : common ; eastern part of the state : rare. In the Raccoon river in Dallas county, this species occurs in greater abundance than in any other locality known ; it is very closely related to *U. metanever* Raf. but is more compressed, and typical specimens have a delicate rose-tinted nacre.

LIST OF FOSSIL MOLLUSCA FROM THE LOESS (POST PLEIOCENE) OF IOWA.

<i>Zonites arboreus</i> Say.	<i>Pupa armifera</i> Say.
——— <i>viridulus</i> Menke.—(Shimek)	——— <i>muscorum</i> L.
——— <i>minusculus</i> Binn.	——— <i>corticaria</i> Say.—(Call).
——— <i>limatulus</i> Ward. — (Shimek).	——— <i>blandi</i> Morse.— (Witter).
——— <i>fulvus</i> Drap.— (Call).	<i>Vertigo simplex</i> Gould.—(Shimek).
<i>Patula alternata</i> Say.	<i>Succinea obliqua</i> Say.
——— <i>strigosa</i> Gould.	——— <i>avara</i> Say.
——— <i>striatella</i> Anthony.	<i>Carychium exiguum</i> Say.
<i>Helicodiscus lineatus</i> Say.	<i>Limnophysa desidiosa</i> Say.
<i>Strobila labyrinthica</i> Say.	——— <i>humilis</i> Say.
<i>Stenotrema monodon</i> Rackett.	——— <i>caperata</i> Say. — (Shimek).
<i>Mesodon clausus</i> Say.	<i>Laptolimnæa</i> ———? (Shimek).
——— <i>multilineata</i> Say.	<i>Physa</i> ———? — (Shimek).
——— <i>thyroides</i> Say.— (Call).	<i>Helicina occulta</i> Say.
<i>Vallonia pulchella</i> Müller.	<i>Pisidium</i> ———? — (Shimek).
<i>Pupa pentadon</i> Say.	<i>Ferrussacia subcylindrica</i> Linn.

Des Moines, May 4, 1888.

TWO NAVAL SONGS.

THE action between the Chesapeake and the Shannon fought June 1, 1813, just outside of our harbor islands, possesses this unique interest for the people of Essex County that it has been, down to this time, their only experience of actual warfare. It occurred not twenty miles from Boston Light. Here was one of the most gallant and bloody engagements of modern times, involving the lives of many men well known in this community and fought almost within ear-shot of our homes, the smoke of the contest darkening the horizon-line of our own waters and obscuring the sunset glow of our own sky.

Our harbor had long been patrolled by foreign cruisers flaunting before our eyes the insolent flag of a power from which we had suffered much. It was well known that the Chesapeake would, as soon as ready for sea, make the attempt to rid our waters of this humiliating intruder, and when at high noon Captain Lawrence, in the pride of youth and manly beauty and flushed with recent success, marched down State street in Boston on that fatal day to board his ship, newly overhauled at Charlestown and in perfect trim, expectation was on tip-toe all along both shores of the bay and little was thought of in our section but the impending action.¹

¹ Hist. Coll. Essex Inst., Vol. XI, p. 37. See also a letter of Rev. Dr. Chas. Lowell, in Boston Transcript for June 11, 1856, detailing his interview with Captain Lawrence, and letters in the same Journal for June 3, and June 6, 1856.

All day the news of the expected collision was spreading about the county, and it did not occur until the close of the afternoon. By that time the hill tops were black with spectators, and house tops and church spires, which commanded a view of the outer islands, were swarming also. Capt. Eben Slocum of Salem, afterwards for many years an officer of the Revenue, who had been a prisoner on one of His Majesty's ships, was set ashore at Marblehead early in the day with a challenge from Captain Broke of the Shannon, addressed to Captain Lawrence of the Chesapeake. This, Captain Slocum had sent forward by post from Marblehead as promptly as possible, but Lawrence waited for no challenge to spur him to activity, and had already gone down to meet the Shannon when it reached Boston. The late Admiral Preble, near the close of his life, made an exhaustive study of this interesting fight, locating it very exactly by the aid of the report of the pilot who took the Chesapeake out of Boston, and corresponding with an English officer, who was himself a survivor of the bloody day. The Admiral's Monograph on the subject and the papers he collected and deposited with the Massachusetts Historical Society leave little to be said on the technical merits of the action.¹

¹ See United Service Magazine for October, 1879. Of this paper the late Rear Admiral Boggs, a nephew of Lawrence, wrote, Dec. 30, 1887, "He (Admiral Preble) sent a copy to Admiral Provost Wallace of the English Navy, who was a young officer attached to the Shannon at the time of the fight. I saw the letter which this gentleman wrote to Admiral Preble in return and it was indeed most complimentary, particularly in reference to the accuracy with which the whole action was described. I would refer you to this pamphlet for the most reliable information on the subject." See also, besides the more familiar authorities, Roosevelt's Naval War of 1812, p. 178; Cooper's Naval History, Vol. II, p. 158; Irving's account in "Spanish Papers," Vol. II, p. 37, or in Analectical Magazine, Vol. II, p. 129; Lossing's account in his Pictorial Field Book of the War of 1812, Ch. xxxi, pp. 698-713, and in Harper's Monthly, Vol. xxiv, p. 172; All the Year Round, Vol. vi, p. 310; Museum of Literature and Science, Vol. iv, p. 562; Naval Chronicle [British], Vol. xxx, p. 183, *et passim*; Brannan's Military and Naval Letters, p. 167; Thompson's Historical Sketch of the Late War, p. 196; Ingersoll's History of the War of 1812, p. 391; Baine's [British] History of the Late War, Ch. vii, p. 96, and appendix xxiv, p. 28; Dennie's

Mr. William H. Foster of Salem, then a clerk in the neighborhood, was asked by Dr. Bowditch, then president of the Essex Marine and Fire Insurance Company having its office at the head of Central street, to get a gig and post himself at Legge's Hill and whenever a shot was fired to bring the news into town. This he did and then returned to the hill to await the result of the action. Capt. Oliver Thayer was with some of his seafaring elders in the spire of the South Church, but as the interest grew more and more intense and spy-glasses more in demand he got little chance to use one. Mr. William Endicott, of Beverly, saw from the roof of the Endicott house in Bartlett street in that town, the two ships standing out on a parallel course, south of Baker's Island. Never in any day before or since did so many persons pass toll gate No. 1, on the Salem turnpike, as on that afternoon of June 1, 1813, on their way to the high ground in the great pastures.

The smoke of battle was seen, but the guns could not be heard. The result was for some days a matter of conjecture as the disabled ship was taken into Halifax, where her gallant dead were buried with the highest naval honors rendered in the most generous spirit, and their remains were then surrendered to the Cartel Brig "Henry," Capt. Geo. Crowninshield, who with a volunteer crew of ship masters brought them back to their mourning country, landed them at Salem, and after the most famous funeral ever seen in Essex County, and an oration from Judge Story, sent them forward to New York to their final resting place in Trinity Church Yard.¹

Portfolio, Vol. X, p. 235, and Vol. XVII, p. 393; Sketches of the War, p. 289; James' Naval Occurrences [British] p. 232; Niles' Register, Vol. V, p. 142, *et passim*; Local Journals of the day.

¹ Judge Story's Oration is in print. The gentlemen who volunteered to man the "Henry," are named with commendation in the Essex Register of Aug. 25, 1813. They were Captains Holten J. Breed, Benjamin Upton, Jeduthan Upton, jr., John Sinclair, Samuel Briggs, Joseph L. Lee, Stephen Burchmore, Thomas Bowditch and Mr. Thorndike Proctor.

Page twenty-five of this volume contains an allusion to a British song commemorating this victory, which happened at a time when the "Mistress of the Seas" was feeling sadly depressed by a series of mishaps to her naval preëminence and from which accordingly she derived exceptional satisfaction. The wounded Broke was knighted and honored with a gold medal for his achievement, two of his Lieutenants promoted, the guns on the Tower of London fired, and the figure head of the Chesapeake presented to him to be displayed as an ornament at the gateway of his country seat to which he retired.

Amongst the other unique phases which this exuberant rejoicing assumed was the production of a song which still holds its place at Harrow and perhaps at other boys' schools in England and appears in the latest editions of the song books. In that of the Harrow school it is set to music so very like the air known to us as "Jordan is a hard road to travel," as to be substantially identical. It is a spirited air and English school boys sing it with a relish to the following verses :

THE CHESAPEAKE AND THE SHANNON.

[From the Harrow School Song Book].

The Chesapeake so bold out of Boston, I am told,
Came to take a British frigate neat and handy, O!
And the people of the port came out to see the sport,
With their music playing Yankee doodle dandy, O!

CHORUS: Yankee doodle, Yankee doodle dandy, O!
The people of the port came out to see the sport
With their music playing Yankee doodle dandy, O!

The British frigate's name, that for the purpose came
To tame the Yankees' courage neat and handy, O!
Was the Shannon, Captain Broke, with his crew all hearts of oak,
And in fighting, you must know, he was the dandy, O!

The fight had scarce begun when the Yankees, with much fun,
Said, "We'll tow her into Boston neat and handy, O!"
"And I'll kalkilate we'll dine, with our lasses, drinking wine,
"And we'll dance the jig of Yankee doodle dandy, O!"

But they soon, every one, just flinched from the gun,
Which at first they thought to use so neat and handy, O!
Brave Broke he waved his sword, crying "Now, my lads, let's board,
"And we'll stop their playing Yankee doodle dandy, O!"

He scarce had said the word, when they all jump'd on board,
And they hauled down the ensign neat and handy, O!
Notwithstanding all their brag, the glorious British flag
At the Yankees' mizzen-peak it looked the dandy, O!

Then here's to all true blue, both officers and crew,
Who tamed the Yankees' courage neat and handy, O!
And may it ever prove in battle, as in love,
The true British sailor is the dandy, O!

Now the interesting fact about all this seems to be that eight or nine months before the capture of the Chesapeake a song with the same peculiar jig movement had been sung in our theatres and on our streets to an air known at that day as "The Landlady of France" — a song inspired by the victory of Hull in the *Constitution*, August 19, 1812, over the ill-fated frigate *Guerrière* and, when these verses are compared with those above printed, they are at once perceived to be the original from which the Harrow School Song is parodied, so that in this instance, at least, if in no other, we may claim to have furnished that *sæva noverca* the mother country, with the *motif* of a British War Song.

William Dunlap's "Yankee Chronology," a spirited musical drama, was produced at the Park Theatre in New York, September 9, 1812 (*Ireland's New York Stage*, Vol. I, p. 288) and Mr. Brander Matthews thinks that may be the origin of these verses. An intelligent veteran of the war of 1812, present at the unveiling of the Perry Statue at Cleveland on Lake Erie, in 1860, told the historian Lossing that he heard them sung at the Park Theatre in New York early in the fall of 1812, and that they were much heard at public meetings, in bar rooms, in work shops, and in the streets of the city. They are as follows:

THE CONSTITUTION AND GUERRIERE.

[AIR: — "*The Landlady of France.*"]

It oft-times has been told that British Seamen bold
 Could flog the tars of France so neat and handy, Oh!
 But they never met their match till the Yankees did them catch,—
 Oh, the Yankee boy for fighting is the dandy, Oh!

The Guerriere, a frigate bold, on the foaming ocean roll'd,
 Commanded by proud Dacres, all the grandee, Oh!
 With as choice a British Crew as a rammer ever drew,—
 They could flog the French, two to one, so handy, Oh!

When this frigate bore in view, says proud Dacres to his crew,
 "Come, clear the ship for action and be handy, Oh!
 "To the weather gage, boys, get her!" and to make his men fight better,
 Gave them to drink gunpowder mixed with brandy, Oh!

Then Dacres loudly cries, "Make the Yankee ship your prize,—
 "You can in thirty minutes, neat and handy, Oh!
 "Thirty-five's enough, I'm sure, and, if you'll do it in a score,
 "I'll treat you to a double share of brandy, Oh!"

The British shot flew hot, which the Yankees answered not
 Till they got within the distance they call'd handy, Oh!
 Now says Hull unto his crew,— "Boys! let's see what we can do!—
 "If we take this boasting Briton we're the dandy, Oh!"

The first broadside we pour'd came her mainmast by the board,
 Which made this lofty frigate look abandoned, Oh!
 Then Dacres shook his head, and to his officers he said,
 "Lord! I didn't think these Yankees were so handy, Oh!"
 "By George," says he, "we're done!"—and then fired a lee gun,
 While the Yankees struck up "Yankee doodle dandy," Oh!

Then Dacres came on board to deliver up his sword,
 Loth was he to part with it, t'was so handy, Oh!
 "Oh! keep your sword," says Hull, "for it only makes you dull,
 "So cheer up,—and let us have a little brandy, Oh!"

Come! fill your glasses full! and we'll drink "To Captain Hull"
 And so merrily we'll push about the brandy, Oh!
 John Bull may toast his fill! let the world say what it will,
 But the Yankee boy for fighting is the dandy, Oh!

THE BATRACHIA OF KALM'S "EN RESA TIL NORRA AMERICA."

BY SAMUEL GARMAN.

IN the history of the North American frogs there is frequent mention of Kalm's references to them in his "Travels into North America." For various reasons a considerable amount of uncertainty has arisen concerning what this author really added to our knowledge of the different species. To throw light on the matter it was necessary to consult both the original and the subsequent editions of the Swedish traveler's work. On account of the rarity of copies of the book, and for the convenience of those who may not have access to it, the references are fully quoted, even though in cases their scientific value may not be very apparent. Five editions are now before me. The original is the Swedish, a small octavo, published in Stockholm: Vol. I in 1753, Vol. II in 1756, and Vol. III in 1761. The second is a translation into German by J. A. Murray, an octavo, printed at Göttingen: Vol. I in 1754, Vol. II in 1757, and Vol. III in 1764. The third is J. R. Forster's English translation, an octavo: Vol. I, Warrington, in 1770, and Vols. II and III, London, in 1771. The fourth is a reprint of Forster's translation, with modifications, in two octavo volumes, also from London, 1772; and the fifth is a two volume quarto edition, in Dutch, published at Utrecht in 1772, the translator of which is much indebted to Forster. The German is by far the best of the translations. Variations in the text, departures from the original, make

it necessary to follow each notice through all the editions. Our quotations are from the English edition of 1772, corrected when necessary by the German rendering of the same passages.

The first notice met with is that on page 205 of volume second, one that adds nothing whatever to knowledge of the species: "Thousands of frogs croaked all the night long in the marshes and brooks [Philadelphia]," 2nd Engl. ed., Vol. I, 55 (1st Engl., I, 70; Ger., I, 221; Dutch, I, 33).

A note of little more importance occurs on page 359 of the same volume. In the German edition, Vol. II, 389, this is rendered "Ausser den singenden und schwitzernden Vögeln von allerley Art, hielt sich gleichfals eine besondere Gattung von Fröschen in diesen Bäumen, des Sommers, häufig auf. Selbige erfüllten, an den Abenden, und in den Nächten, vornämlich wenn die Tage heiss waren, oder ein Regen zu kommen schien, die Luft mit ihren vielfältigen Geschrey, und stritten gleichsam mit den Vögeln in die Wette. Dadurch erregten sie oft einen solchen Lerm, dass einer auf der Gasse kaum recht verstehen konnte, was der andere sagte." This passage in Forster's hand becomes "Besides numbers of birds of all kinds which make these trees their abode, there are likewise a kind of frogs which frequent them in great numbers in summer; they are Dr. *Linnæus's Rana arborea*, and especially the *American* variety of this animal. They are very clamorous in the evening and in the nights (especially when the days had been hot, and a rain was expected) and in a manner drown the singing of the birds. They frequently make such a noise, that it is difficult for a person to make himself heard," 2nd Eng., I, 194 (1st Eng., I, 249; Dutch, I, 108). There is nothing in Kalm's writing that warrants the assertion that the tree frog mentioned was a variety of the European form. Kalm does not say he saw the ani-

mal. From the locality in which the account was written, New York, it is possible the frog was *Hyla versicolor*; but it was much more likely to have been *Hyla pickerlingii*, which in damp weather takes to the tops of bushes and low trees.

The third notice is found on page 45 of Vol. III of the Swedish edition. For the purpose of correcting the English version of the paragraph by Forster, which is given complete, we give the German rendering of the first sentence, and of the last, in the account as Kalm wrote it. "Es wurde hieselbst von den Schweden eine Art Frösche Sillhoppettossor (Heringhüpfer) genannt, welche diese Jahreszeit des Abends und in der Nacht in den Morästen, wie auch grossen Pfützen und Teichen, zu schreyen anfiengen . . Sie dürften genannt werden Können : *Rana virescens plantis tetradactylis fissis, palmis pentadactylis semipalmatis, macula depressa fusca pone oculum,*" Murray's translation, III, pp. 57, 58. In the original the word fusca is *fusta*. Forster's translation of the same is as follows: "*Rana ocellata* are a kind of frogs here, which the Swedes call, *Sillhoppettosser, i. e. Herring-hoppers*, which now began to quack in the evening, and at night, in swamps, pools, and ponds. The name which the Swedes give them is derived from their beginning to make their noise in spring, at the same time when the people here go catching what are called herrings, which however differ greatly from the true *European* herrings. These frogs have a peculiar note, which is not like that of our *European* frogs, but rather corresponds with the chirping of some large birds, and can nearly be expressed by *picet* [*piit* by Kalm]. With this noise they continued throughout a great part of spring, beginning their noise soon after sun-setting and finishing it just before sun-rising. The sound was sharp, but yet so loud that it could be heard at a great distance. When

they expected rain they cried much worse than commonly, and began in the middle of the day, or when it grew cloudy, and the rain came usually six hours after. As it snowed on the 16th of the next month [April], and blew very violently all day, there was not the least sign of them at night; and during the whole time that it was cold, and whilst the snow lay on the fields, the frost had so silenced them, that we could not hear one: but as soon as the mild weather returned, they began their noise again. They were very timorous, and it was difficult to catch them; for as soon as a person approached the place where they lived, they are quite silent, and none of them appeared. It seems that they hide themselves entirely under water, except the tip of the snout, when they cry. For when I stepped to the pond where they were in, I could not observe a single one hopping into the water. I could not see any of them before I had emptied a whole pool, where they lodged in. Their colour is a dirty green, variegated with spots of brown. When they are touched they make a noise and moan; they then sometimes assume a form, as if they had blown up the hind part of the back, so that it makes a high elevation; and then they do not stir, though touched. When they are put alive into spirits of wine, they die within a minute," (*loc.* New Jersey) 2nd Eng., I, 379 (1st Eng., II, 88; Dutch, II, 18).

Apparently the frog Kalm heard was not the one he caught. The cry is that of *Hyla pickerinii*; the frog taken was probably that named by authors "*Rana halecina* Kalm," the leopard frog. The name *Rana halecina* does not occur in either of the editions of Kalm's work we have at hand. That author's nearest approach to a Latin name for the frog is in the description *Rana virescens*, etc., and it may rightly be objected to this that it was not given as a binomial designation. That it was not regarded as such

by Linné, or Forster, is evident from the use of *Rana ocellata*, which does not occur in either the Swedish or the German editions, for the same frog, or one supposed to be the same. I have been able to trace the name *Rana halecina* back to Linné's 12th edition of the Systema, Vol. I, p. 356, 1766, but no farther. It appears there as a synonym for *Rana ocellata*. If the name *halecina* had appeared under authority of Kalm it is unlikely the fact would have escaped the translators of his work. This and the manner in which it is used by Linné lead to the conclusion that the latter merely translated the Swedish name into Latin as a more convenient term. From the Systema, the quotation of all that relates to *Rana ocellata* will best serve to give an exact idea of the matter :

"*Rana ocellata*. 10. R. auribus ocellatis, pedibus muticis.

Mus. Ad. Fr. [should be *Mus. Lud. Ulr.*] 2
p. 39.

Brown. jam. 466. t. 41 f. 4. *Rana maxima*
compressa miscella.

Kalm. it. 3. p. 45. *Rana halecina.*

Catesb. car. 2. p. 72. t. 72. *Rana maxima*
americana aquatica.

Seb. mus. 1. t. 76. f. 1

Habitat in America.

Ad aures macula ocellaris utrinque.

Palmæ tetradactylæ fissæ, Plantæ
pentadactylæ, subpalmatæ."

Analyzing this it is found that Linné's species, *R. ocellata*, was originally (*Syst. Nat.*, ed. x, 1758, I, p. 211) based on Brown's notice. The latter has mixed together, as a single species, the Curruru of Piso (*Bufo marinus* L. ; Schn.), the *Rana terrestris* of Catesby (*Bufo lentiginosus* Shaw), the *Rana dorso pullifero* of Linné, 1748 (*Pipa*

americana Laur.), a species of *Leptodactylus* (possibly *L. pentadactylus* Laur. ; Blgr.), and apparently, in the description, a species of *Hyla* (possibly *H. lichenata* Gosse ; Blgr.). Kalm's reference is probably to the leopard frog ; Catesby's is without doubt to the bull frog ; and Seba's figure is that of the marine toad, *Bufo marinus*. Consequently *Rana ocellata* L. includes seven distinct species, belonging to five different families. From this, if we conform to general usage, we get no scientific name for Kalm's frog, and must take that next in order of time properly applied to this species.

Rana virescens having been ruled out, there seems to be none available previous to *Rana pipiens* of Schreber. In the eighteenth volume of the periodical "Der Naturforscher," Halle, 1782, p. 182, he describes and figures the species in a manner that leaves no doubt whatever as to its identity. He discards previous names on account of the confusion and uncertainty attending their use. His synonymy is quoted entire :

"DER PIPFROSCH.

RANA pipiens. — S. Tab. IV.

Rana aquatica. CATESB. *Carolín*. 2 p. 70.
tab. 70. KLEIN *quadrup*. p. 119.

Rana virescens, plantis (muss heissen : palmis) tetradactylis fissis, palmis (muss heissen : plantis) pentadactylis semipalmatis ; macula depressa fusca pone oculum. KALM
resa til norra America tom. 3. p. 46.

Rana halecina, Sill-hoppetossor. KALM l. c.
p. 45."

As seen above, *R. halecina* does not occur in the Resa. Schreber's use of *R. virescens*, with his punctuation, does

not fix *it* as the name of the species. In fact the name for the species, as appears from the literature so far as it has come to hand, is *Rana pipiens* Schreb. Gmelin, 1788, Donndorf, 1793 and 1798, and Schneider, 1799, all use this name. The first, in his synonymy gives "*Kalm it. 3. p. 45. 46. Rana halecina, & Rana virescens*" as if copied from Schreber. Daudin, 1802, resurrected the name *R. halecina* (Hist. Nat. Rain., p. 41; Rept. VIII, 122) and has been followed by the majority of writers on the subject since that time. Daudin reverses the order of Kalm's names and pages in such a way, in his references, as to suggest that he did not get them from the original, but took them second-hand, in all probability from Gmelin. Apparently Schreber was influenced in his choice of a name by Kalm's account of the cries; and thus we have, as a consequence of a mistake by the Swede as to the owner of the voice, a name fixed upon the leopard frog which had been much better bestowed on the little "Piping Frog," *Hyla pickeringii* Holbr; Lec.

The bull frog is referred to at length in the Resa, Vol. III, 110. As the translation by Murray gives what Kalm wrote, the first five sentences are quoted to supply what is omitted in the English: "Manteskühe (Mantes-Kor. Der Frosch heisst bey dem Ritter Linnæus *Rana boans*, *Syst. Nat.*, T. I, p. 213. Catesby hat ihn in seiner *Nat. Hist. of Carol.*, Vol. II, p. 72, unter dem Namen *Rana maxima Americana aquatica*, beschrieben, und in den natürlichen Farben abgebildet) wurden von den Schweden eine Art Frösche genannt. Woher sie diesen Namen entlehnet haben, konnten sie nicht sagen, sie glaubten aber doch, dass er zuerst aus der Sprache der Wilden hergeleitet wäre. Die Engländer nannten sie Bullfrog, das ist, Ochsenfrosch, ein Name, der sich auf ihren Laut beziehet. Einige von den Schweden bedienen sich theils des Engländischen Na-

mens, theils uebersetzen sie ihn Schwedisch, und nennen sie Oxgrodor. Ich hatte heute zum ersten mahl Gelegenheit, sie zu hören und zu sehen," Germ. ed., III, 140. The foregoing is replaced by Forster's first sentence in the following, otherwise the English fairly renders the Swedish text. "Bullfrogs (*Rana boans* Linn. Syst. i. p. 358. *Rana maxima*, *Americana aquatica*. Catesb. Carol. ii. 72) are a large species of frogs, which I had an opportunity of hearing and seeing to-day. As I was riding out, I heard a roaring before me; and I thought it was a bull in the bushes, on the other side of the dyke, though the sound was rather more hoarse than that of a bull. I was however afraid, that a bad goring bull might be near me, though I did not see him; and I continued to think so till some hours after, when I talked with some *Swedes* about the *Bullfrogs*, and, by their account, I immediately found that I had heard their voice; for the *Swedes* told me, that there were numbers of them in the dyke. I afterwards hunted for them. Of all the frogs in this country, this is doubtless the greatest. I am told, that towards autumn, as soon as the air begins to grow a little cool, they hide themselves under the mud, which lies at the bottom of ponds and stagnant waters, and ly there torpid during winter. As soon as the weather grows mild, towards summer, they begin to get out of their holes, and croak. If the spring, that is, if the mild weather, begins early, they appear about the end of *March*, old stile; but if it happens late, they tarry under water till late in *April*. Their places of abode are ponds, and bogs with stagnant water; they are never in any flowing water. When many of them croak together, they make an enormous noise. Their croak exactly resembles the roaring of an ox or bull, which is somewhat hoarse. They croak so loud, that two people talking by the side of a pond cannot understand each

other. They croak all together ; then stop a little, and begin again. It seems as if they had a captain among them : for when he begins to croak, all the others follow ; and when he stops, the others are all silent. When this captain gives the signal for stopping, you hear a note like *poop* coming from him. In day-time they seldom make any great noise, unless the sky is covered. But the night is their croaking time ; and, when all is calm, you may hear them, though you are near a mile and a half off. When they croak, they commonly are near the surface of the water, under the bushes, and have their heads out of the water. Therefore, by going slowly, one may get close up to them before they go away. As soon as they are quite under water, they think themselves safe, though the water be very shallow.

Sometimes they sit at a good distance from the pond ; but as soon as they suspect any danger, they hasten with great leaps into the water. They are very expert at hopping. A full-grown *Bullfrog* takes near three yards at one hop. I have often been told the following story by the old *Swedes*, which happened here, at the time when the *Indians* lived with the *Swedes*. It is well known, that the *Indians* are excellent runners ; I have seen them, at Governor *Johnson's*, equal the best horse in its swiftest course, and almost pass by it. Therefore, in order to try how well the bull-frogs could leap, some of the *Swedes* laid a wager with a young *Indian*, that he could not overtake the frog, provided it had two leaps before hand. They carried a bull-frog, which they had caught in a pond, upon a field, and burnt his back-side ; the fire, and the *Indian*, who endeavored to be closely up with the frog, had such an effect upon the animal, that it made its long hops across the field, as fast as it could. The *Indian* began to pursue the frog with all his might at the proper time : the noise he made

in running frightened the poor frog ; probably it was afraid of being tortured with fire again, and therefore it redoubled its leaps, and by that means it reached the pond before the *Indian* could over-take it.

In some years they are more numerous than in others : nobody could tell, whether the snakes had ever ventured to eat them, though they eat all the lesser kinds of frogs. The women are no friends to these frogs, because they kill and eat young ducklings and goslings : sometimes they carry off chickens that come too near the ponds. I have not observed that they bite when they are held in the hands, though they have little teeth ; when they are beaten, they cry out almost like children. I was told that some eat the thighs of the hind legs, and that they are very palatable," 2nd Engl. ed., II, 29 (1st Engl., II, 170 ; Dutch, II, 206).

Linné had applied the name *Rana boans* to a South American tree frog, Syst. Nat., ed. x, 1758, I, 213, and Kalm mistook in applying it to the bull frog. Forster retained the name, but, correctly as it happened, added as a synonym Catesby's *Rana maxima*, which Linné had placed under his *Rana ocellata*. Catesby's name for this frog has about the same standing as Kalm's *R. virescens* for the leopard frog, and like the latter gives way to one of much later date, *Rana Catesbeiana* Shaw, 1802, Gen. Zool., III, Amphibia, 106, pl. 33.

Taking Linne's references, the synonymy of *Rana boans*, from the twelfth edition of the Systema backward, stands something like this :

Rana boans Linné, 1766, Syst. Nat., I, 358 ;

Linné, 1758, Syst. Nat., I, 213.

Rana lactea Linn., 1754, Mus. Ad. Frid.,
p. 47.

Rana, surinamensis Seba, 1734, Thesaurus,
I, 141, pl. 71, f. 3; Linn., 1749, Amœn.
Acad., I, 285.

Rana, surinamensis, marmorata Seba, 1734,
Thes., I, 141, pl. 71, f. 4 and 5.

By referring to Seba it will be seen that *R. boans* L. contains two species. Both, however, belong to the tree-frogs, Hylæ, and furnish no excuse for the inclusion of the bull-frog by Kalm and Forster.

To complete the list of notices, a mention of the frogs is found on page 143 of Vol. III of the "Resa :—" "The black snakes kill the smaller species of frogs, and eat them," 2nd. Engl. ed., II, p. 60 (Germ., III, 180; Dutch, II, 34); and another occurs in the same volume on page 422: "The *Bull-frogs* live in the pools of this neighborhood" [Bay St. Paul, below Quebec], 2nd Engl. ed., II, 341 (Germ., III, 512; Dutch, II, 163). The dates of the republications of the "Travels," from Forster, in the Pinkerton and other collections of voyages are so recent as to render references to them unnecessary in this study.

The foregoing, so far as I have been able to determine, comprise all the notes upon batrachians in Kalm's "Travels." Bringing them together in this way, it seems to me, affords the best means of dispelling the confusion in literature regarding them, whether the remarks themselves are considered of sufficient value to warrant reproduction. Finally, the only species noticed by Kalm that can be identified with any degree of confidence are the bullfrog, *Rana Catesbeiana* Shaw, and the leopard frog, *Rana pipiens* Schreber.

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REPTILES AND BATRACHIANS FROM THE CAYMANS AND FROM THE BAHAMAS.

COLLECTED BY PROF. C. J. MAYNARD FOR THE MUSEUM OF
COMPARATIVE ZOOLOGY AT CAMBRIDGE, MASS.

BY SAMUEL GARMAN.

A PORTION of this collection, that from Little Cayman and Cayman Brac, furnishes a sort of sequel to the writer's notice of a collection from Grand Cayman; the balance, from Inagua, Rum Key, and Andros islands, adds something to our knowledge of the fauna of the Bahamas. The localities were chosen by the collector with special reference to study of the ornithology, and their distribution and isolation have given an equal importance to what he has gathered of the lower vertebrates. The Bahaman localities had been touched upon by other collectors at various times, but not exhaustively. At the time of making these collections the Caymans were untrodden ground to workers in the interest of zoology; consequently this writing is in the nature of a first notice.

Approximately, Cayman Brac is not far from a hundred and twenty miles west a little south from Cape Cruz, the southernmost point of Cuba. It is about the same dis-

tance directly south of Cuba, midway in the length, and nearly or quite as far northwest of Jamaica. Little Cayman is seven miles west of Cayman Brac. Grand Cayman lies some seventy miles, more or less, west a little south from Little Cayman, or about two hundred miles south of Cuba, and as much west northwest from Jamaica. In all probability the islands Cayman Brac, Little Cayman and Grand Cayman are not of earlier date than the late calcareous formations of Cuba. That there has at any time been a land connection with that island is quite problematical. The affinities of the reptiles might have been no closer if such had been the case, but it is entirely needless to suppose anything of the kind in order to account for the relationships observed. The currents south of Cuba are such that objects thrown over at points on its shores may be afterward picked up on the Caymans. Drift in these currents might readily transport the progenitors of the species now occupying these localities. On the other hand their traffic being almost wholly with Jamaica, it would be surprising if some of its forms had not obtained a foothold. The affinities of the species from Little Cayman and Cayman Brac are in line with those from Grand Cayman, except, perhaps, in case of the *Anolis* of the latter, *A. conspersus*, Garm., which, though quite distinct, is near the Jamaican *A. grahamii*, Gray. All of the species reported from Little Cayman are of Cuban origin: *Anolis maynardii*, *Anolis luteosignifer*, *Cyclura nubila* and *Hyla septentrionalis*. Of those from Cayman Brac, *Anolis luteosignifer*, *Liocephalus carinatus*, *Cyclura nubila* and *Alsophis fuscicauda* are of Cuban, while the *Sphaerodactylus*, the *Aristelliger* and the *Diploglossus* are in all likelihood of Jamaican derivation.

The two crocodiles reported by Prof. Maynard are no doubt the Cuban species. The small land or fresh-water

turtle said to have been introduced from Grand Cayman is likely to prove *Emys decussata*, common from Cuba to Porto Rico. The notes quoted are those of the collector.

I. CAYMAN BRAC.

ARISTELLIGER PRÆSIGNIS *Hallow. & Cope.*

The specimens from Cayman Brac are not so symmetrically marked as those from Grand Cayman; on the former the brown appears in vermiculations and the transverse bands are indistinct or absent, as also the bands behind the eyes. Apparently there are no important structural differences. Commonly known as the "woodslave."

"Common about the houses and seems to be fond of sugar. I saw several at different times eating it. The ground color of a specimen captured in my house, April 18, was dark chocolate brown varied with olivaceous. There is a dark line from the nostril through the eye to the occiput. Top of head mottled with darker. Body above mottled with very dark brown, which markings have the appearance of arrangement in transverse bands. The spots are smaller on the sides, and all are margined with yellowish rufous, the edgings and spots decreasing in dimensions below. Legs and tail transversely banded with darker. Tail lighter than body and marked with four series of spots that are often confluent. Iris silvery, finely dotted with blue. These lizards are rather sluggish; they are partly or wholly nocturnal in habits; they live in houses, in crevices or beneath the palm thatch. Their odor resembles that of the striped snakes, *Eutaeniacæ*."

SPHÆRODACTYLUS ARGIVUS sp. n.

Snout pointed, as long as the distance between the eye and the ear-opening, one and a half times the diameter of

the orbit. Ear-opening small, subround. Rostral medium, longitudinally cleft above, in contact with two large scales and a median small one between the nostrils. Labials five to six. Lower labials five, the anterior subtending the first upper and two-thirds of the second. Mental large; submentals two small ones in contact with the mental, and behind these still smaller ones decreasing in size toward the granules of the throat. A small spine-bearing scale on the upper eyelid. Head and throat covered with keeled granules, larger on the snout. Dorsal scales keeled, not half as large as the ventrals; scales on the flank larger; those of the belly still larger, smooth. Tail round, tapering, covered by large smooth scales, except above the base where a few are keeled.

Pinkish or reddish brown, profusely sprinkled with small spots of brown arranged in longitudinal series, occasionally confluent. Between the hips on each side of the middle there is a small white spot, in front of each of these, another, and, behind each, one or two more, making a series of three or four as if a white line had been broken up. The lateral edges of these spots are dark brown. Head lighter, with faint small spots of brown. Belly light, lateral edges of scales punctulate with brown.

Closely allied to *S. argus* of Jamaica.

ANOLIS LUTEOSIGNIFER sp. n.

Compared with *Anolis sagræ*, with which it is closely allied, this lizard is similar in size and shape and to some extent in squamation. It is distinguished by less of convexity on the snout, the rostral canthus being more prominent and the scales less strongly keeled; it has more uniformity in the sizes of the dorsal scales; and, from alcoholic specimens only, its gular appendage seems to have been yellow rather than red.

In comparison with *A. ordinatus*, which it approaches more nearly in shape of head, its scales are not so strongly keeled, and are smaller in the dorsal series, it lacks the whitish spots and lines, has less of olivaceous in its general color, and is yellow instead of dark brown on the gular appendage.

"Only one species of *Anolis* is found on this Key. It is abundant everywhere, but prefers the stems of the cocoa trees. In color it varies from very dark brown, nearly black, to pale brown or grayish."

LIOCEPHALUS CARINATUS Gray, 1827.

The cephalic plates of the specimens from this island are not so rough as are those of others from Cuba. Except in this particular I see nothing that may be taken for a distinguishing feature.

"These lizards are common in the immediate vicinity of the shores, or about the houses. They are rarely or never seen in the interior of the island. The tail is curled over the back when running. In this respect the species differs from that obtained on Inagua."

CYCLURA NUBILA Gray, 1831.

"The Iguana occurs commonly in the cliffs of both this island and Little Cayman."

DIPLOGLOSSUS MACULATUS sp. n.

Lateral teeth subconical, blunt, slightly compressed. Ear-opening not half as large as eye-opening. A large azygos prefrontal, broader than the frontal and meeting its entire anterior border, in contact with the largest loreal at each side, separated from the rostral by two pairs of shields the posterior of which are about twice as large as the anterior. Frontal one and one-half times as long as

broad. Parietals separated from supraoculars by three shields, not in contact with the frontal. Interparietal twice as large as occipital, the two separating the inner parietals. First labial and internasal between nasal and rostral. Nasal not in contact with the largest loreal. Mental narrower than rostral; a large submental followed by four pairs, larger backward, two anterior in contact on the mesial line. The suture between the sixth and seventh upper labials lies below the centre of the eye.

Body slightly depressed. Scales with a central keel and fourteen to sixteen striæ, in thirty-nine series around the middle of the body. Adpressed the limbs do not meet by the length of the arm and hand. Fingers moderate, second and third very nearly equal in length; they are longer than in *D. cruscus*, on which, also, the middle fingers differ more in length. Tail depressed at base, round posteriorly; upper series of scales keeled, lower faintly striate, broader.

Back pale brown with numerous small spots of brown, arranged in longitudinal and transverse series. Flanks, from snout to hips, darker with longitudinal streaks of lighter in the middle and a few small spots of white about the shoulders. Lateral edges of ventrals a little darker.

Closely allied to *D. cruscus* and with it to *D. occidus* from Jamaica.

"This lizard is taken under the piles of cocoanut husks; it is called a "wass" (corruption of wasp) and said to be poisonous."

ALSOPHIS FUSCICAUDA var. n.

Brown. Upper part of neck dark brown; behind this for about half of the total length the back is crossed by narrow bands of dark, occupying the length of a scale and separated by spaces of equal width; posterior half of en-

ture length very dark above and below. Anteriorly the belly is reddish with hinder edges of the scales dark brown. On the majority of the scales the tip to the hinder half is dark brown while the anterior portion is light. Many of the median dorsals have white edges.

Scales in seventeen rows; pores two; ventrals one hundred and seventy-eight; anal bifid; subcaudals one hundred and twenty-eight pairs. A variety of *A. angulifer*.

"This snake was taken in the scrub; it is rare. I saw only one other on the Key."

II. LITTLE CAYMAN.

ANOLIS MAYNARDII sp. n.

Head long, pointed, tapering regularly on all sides, two and one-third times as long as broad, twice as long as the tibia; frontal ridges strong, converging anteriorly; rostral canthus sharp; forehead concave. Upper head scales faintly carinate; scales of the supraorbital series enlarged, separated anteriorly by one scale, posteriorly by two; eight or nine enlarged, keeled supraoculars, in contact with the supraorbitals; occipital as large as the ear-opening, separated from the supraorbitals by two scales; canthal scales four; loreal rows three; seven or eight labials to below the centre of the eye. The distance of the nostrils behind the end of the snout equals the width of the interorbital space, a little less than the orbital diameter. The frontal ridges approach each other so closely between the nostrils as to appear like a single ridge from this point forward. Ear opening half as large as eye opening. Gular appendage moderate, covered with keeled scales. Body slightly compressed; dorso-nuchal fold very low. Scales of back and flanks equal, ventrals a little larger, all keeled. Adpressed the hind limb reaches the ear. Digital expan-

sions moderate; twenty-five lamellæ under phalanges ii and iii of the fourth toe. Tail round, about one and one half times the length of head and body, the keel of the enlarged vertebral series a little the more conspicuous. Male with enlarged postanal scales.

Dark green on the back (yellowish in life), darker on the sides, lighter green beneath; top of head yellowish green; a whitish line from snout to shoulder; a pair of faint purplish lines on each side of the neck, breaking into spots backward, one of them starting from the upper angle of the eye, the other from the supraorbital ridge. Goitre green, yellow posteriorly.

Allied to *A. porcatus*, but with a longer snout and lower facial ridges.

"Although this Key is only seven miles distant from Cayman Brac it has one species of *Anolis* which does not occur at all on the other island, the green species which is here abundant. It varies from a beautiful grass green to brown. The common *Anolis* of Cayman Brac is also abundant."

ANOLIS LUTEOSIGNIFER sp. n.

CYCLURA NUBILA Gray, 1831.

HYLA SEPTENTRIONALIS Tsch., Blgr.

"The *Hyla* is very abundant but never occurs on Cayman Brac. Although it has been carried there by the people it will not live there."

CROCODILUS.

"Two species of crocodile have been taken on this island and one on Cayman Brac. I saw but a portion of one specimen. The natives assured me the species were similar to those found in Cuba."

TESTUDINATA.

"A land or fresh-water Turtle has been introduced into Cayman Brac from Grand Cayman ; it is called Hig-a-tee."

"The Leather Back [*Dermochelys*] occurs occasionally. Loggerheads [*Thalassochelys*] are abundant and breed on the islands. May 3, I saw where one had crawled ashore in three places on Little Cayman. Although young Loggerheads must be abundant after hatching I was told the small ones were never seen ; when captured they are always adult or nearly so."

"Green and Hawksbill turtles are common, the latter more so than the former. Both breed here and the young of both are captured."

"I was told of a hybrid between the Hawksbill and the Loggerhead, on which the shell was good often, but not always, and the head resembled that of the Loggerhead. I asked the fishermen why the shell was not always good and was informed that when the offspring "took after the mother" (always supposed to be the Loggerhead) the shell was poor but that when they "took after the father," the Hawksbill, the shell could be used."

III. INAGUA.

ANOLIS LEUCOPHÆUS sp. n.

Head moderate, one and three-fourths times as long as broad, longer than the tibia ; frontal ridges low ; forehead concave ; rostral canthus medium. Upper head scales smooth, moderately large ; those of the supraorbital series larger, the length of the anterior equals half their distance from the end of the snout, in contact on the mesial line ; eight or nine enlarged, faintly keeled supraoculars, separated from the supraorbitals by a single series of small scales ; occipital nearly as large as the ear opening, sepa-

rated from the supraorbitals by two to three series of scales; canthal scales two; loreal rows five; six or seven labials to below the centre of the eye. Ear opening moderate. Gular appendage rather small. Dorsal scales and those of flanks granular, smooth or but faintly keeled; ventrals larger, smooth. Adpressed the hind limb reaches the eye; digital expansion moderate. No dorso-nuchal crest. Tail compressed, more than one and one-half times as long as head and body, crest low, scales keeled, lower larger.

Grey, irregularly freckled on the upper surfaces with small spots, lines and dots of black; lower sides of legs spotted with brown; labials with a series of spots of brown; chin with two pairs of series of small spots, diverging toward the throat; a dark band from snout to eye; eyelids with radiating streaks of brown; tail with broad bands of brown separated by narrow spaces of light color.

LIOCEPHALUS SCHREIBERSII Gray; Cope.

Professor Maynard says this lizard does not curl its tail over its back when running but carries it straight, differing in this habit from *L. carinatus*.

AMEIVA MAYNARDII sp. n.

Nostril in the posterior part of the anterior nasal; internasal large, octagonal, separated from the rostral; prefrontals longer than broad, forming a long median suture; frontal broad and blunt-angled anteriorly, about one and one-third times as long as broad; postfrontals in contact with the hinder two of the supraoculars; parietals five, subequal, or interparietal rather larger and its sides nearly parallel; occipitals in two transverse series of five, or more, short plates each; supraoculars four, second largest; supraciliaries seven; anterior loreal small, second very large;

labials six to seven, five to below the centre of the eye, third longest; lower labials five, third and fourth longest; mental moderate; a single anterior submental followed by five pairs, the first two or three of which are in contact with the lower labials. Gular fold with five or six transverse series of enlarged granules. Dorsal scales small, hexagonal, uniform; laterals smaller; ventrals in ten series, outer half as wide as the second, about thirty-five in a row from chest to preanals. A pair of large preanals; in front of them a single one, and in front of it another, or a pair of smaller ones. A series of six or seven moderate brachials; six or seven broadantebrachials, in a single row. Femoral pores twenty-four. Upper caudals keeled, lower smooth.

Back black, with a yellow line of five or six scales in width from the supraciliaries on each side of the black vertebral band of about ten scales, and another line of yellow on each flank at the edges of the ventrals, starting from the ear. Head, lower surfaces, limbs and tail olivaceous; head and throat tinted with yellow.

IV. RUM KEY.

SPHÆRODACTYLUS CORTICOLUS sp. n.

Snout moderate, pointed, as long as the distance between the eye and the ear, about one and one-fourth times the length of the orbit. Ear opening very small, oval, vertical. Rostral large, longitudinally cleft above. Labials four; lower labials four, anterior nearly as long as the two above it; posterior of each series very small. Mental large, truncate posteriorly and in contact with two moderate sized scales behind which are smaller ones, decreasing in size to the granules of the throat. Two larger internasals and a median small one. Head covered with

small, keeled granules, larger on the snout. Dorsal scales small, keeled; those on the flanks larger; those on the belly twice as large as the vertebrales, smooth. A small spine-bearing scale above the middle of the eye. Tail round, covered with large smooth scales, with a median series of larger ones below.

Brownish with faint small spots of darker which show tendency to form longitudinal lines on head, flanks, and base of tail. Lips mottled with brown and lighter color. Two streaks on each side of the base of the tail. Lower surfaces lighter, punctulate with brown on the free edges of the scales.

This species bears much resemblance to *S. notatus* in shape and coloration; the dorsal scales, however, are only about half as large as in that species. The keels are sharper, the snout broader, and the colors darker than in *S. argivus*.

SPHÆRODACTYLUS DECORATUS sp. n.

Head short; snout blunt pointed, as long as the distance between the eye and the ear opening, equal to length of orbit. Ear opening oval, vertical, as large as the digital expansion. Rostral moderately large, with a median cleft above, between the nostrils in contact with a series of four internasals. Submental scales comparatively large. Head covered with small granules, convex or slightly keeled, larger on the snout. Dorsal scales minute; laterals larger; ventrals largest, flat. Caudal scales larger than dorsals, smooth, lower largest.

Brown, with a white band across the parietals; a second white band behind the occiput encircles the neck and is separated from a third, in front of the shoulder, by a black band across the neck in which a small white spot appears at each side of the vertebræ. Five white bands cross the

body between arms and hips. Tail with six (or more) black rings separated by white ones of equal width. Lower surfaces light.

LIOCEPHALUS LOXOGRAMMUS Cope, 1887.

HYLA SEPTENTRIONALIS Tsch.; Blgr.

V. ANDROS ISLAND.

SPHÆRODACTYLUS ASPER sp. n.

Snout pointed, longer than the distance between the eye and the ear, one and one-half times the diameter of the orbit. Ear opening small, as large as the digital expansions, oval, inclining backward from a vertical. Rostral large, with median cleft above. In contact between the nostrils with two moderate-sized and a smaller median plate. Nostril pierced between rostral, first labial and three scales. Five upper and five lower labials; anterior lower nearly as long as first two of the upper. Upper eyelid with a small spine-like scale. Head covered with keeled granular scales, those on snout very little larger. Dorsals twice as large as ventrals, strongly keeled, in sixteen to eighteen rows, with a vertebral zone of granules; ventrals moderate, imbricate, smooth. Gular scales granular, little larger toward the pair of larger submentals immediately behind the mental. Caudal scales irregular, spine-like, imbricate, lower series smooth, median lower broad.

Brown; scales minutely puncticulate; belly lighter, free margins of scales dark; head yellowish without spots or streaks.

Closely allied to the species I have elsewhere described from Hayti under the name *S. picturatus*, on which the scales on head and tail are less like spines, and which is handsomely marked by lines, bands and spots.

ON AN EEL FROM THE MARSHALL ISLANDS.

BY SAMUEL GARMAN.

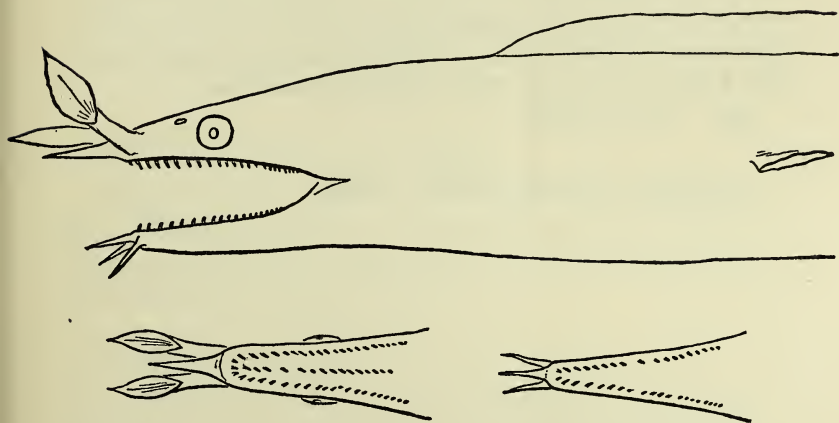
THE eel from which the accompanying sketches and description were drawn was sent to the Museum of Comparative Zoology in a collection, from the Marshall Islands, made by the Rev. B. G. Snow. As the balance of the lot was composed entirely of shoal-water species, the subject of this notice probably belongs to the same category. Its peculiarities, especially those of the rostrum, distinguish it from the other species of its genus (*Muræna*) to such an extent as will hardly permit its admission into any of the subgenera at present recognized. It is most closely allied to *Thyrsoidea*, but differs in snout and dentition.

A subgenus (*Rhinomuræna*) to contain it may be characterized by the nasal tubes, the rostral appendages, the uniserial teeth, and the elongate tail.

RHINOMURÆNA QUÆSITA, sp. n.

Form very slender, slightly compressed, tapering to snout and tail. Head small, elongate and narrow; snout pointed, ending in the acute extremity of a flexible prolongation. Mouth deeply cleft, interior surface closely sprinkled with small round papillæ; teeth slender, conical, acute, uniserial on jaws and palate, hooking backward,

anterior little larger, about twenty in each maxillary series, palatine series nearly as many as the others. Eye moderate, over the middle of the length of the mouth, little less than half as long as the snout, excluding the fleshy appendage. Posterior nostrils small, oval, not tubular, in front of the upper edge of the eye. Anterior nostrils at the end of the snout, tubular; each having the appearance of being split on its lower side for about half its length, thus forming in front of the tube a broad flap that termi-



nates in an acute point. At the symphysis on the lower jaw there is a sharp fleshy prolongation, similar to that on the the upper, but smaller, and a little below this, at each side of it, there is another extending forward and downward. Gill openings lateral, small, about twice the diameter of the eye, forming a longitudinal slit of which the anterior borders are prominent (a shape in part due to contraction). Pectorals absent; dorsal and anal well developed, continuous around the end of the tail. The dorsal begins in front of the middle of the distance from gill-opening to

mouth, becomes nearly as high as the body halfway to the end of the tail, and decreases in height forward and backward; the anal is of similar shape, but only half as high. Tail acuminate, tapering regularly from the base, twice as long as head and body.

Body, head, tail, and inside of mouth cavity black; upper half of dorsal yellow; lower margin of anal white; lower lip white, except at and near the symphysis.

Total length thirty-three inches, snout to vent eleven. Greatest depth of body about half an inch; depth of mouth near nine-sixteenths; length of head seven-eighths; and from snout to hinder edge of gill-opening two inches. Figures a little more than twice natural dimensions.

Hab. Ebon Island.

Cambridge, Mass., May 27, 1888.

ANNUAL MEETING, MONDAY, MAY 21, 1888.

THE annual meeting was called to order this evening at 7.30 o'clock: the President in the chair. Records of the last annual meeting were read and approved.

Reports of the Secretary, Treasurer, Auditor, Librarian, Curators and Committees were read and accepted and ordered to be placed on file.

On motion of Prof. E. S. Morse

Voted that the thanks of the Institute be tendered to Mr. William P. Upham, the Librarian, who has declined being a candidate for re-election, for his faithful services as Librarian for nineteen years.

On motion of Mr. R. S. Rantoul

Voted that the thanks of the Institute are due to Mr. George D. Phippen, the Treasurer, for his laborious and successful efforts in the interest of the Institute the past year, and for his able and intelligible financial report.

The report of Mr. T. F. Hunt, chairman of the committee on nominations, was read by the Secretary and accepted.

Voted that the meeting proceed to the choice of officers for the ensuing year. Messrs. W. H. Gove and David Coggin were appointed a committee to receive, assort and count the votes.

OFFICERS ELECTED.

PRESIDENT:**HENRY WHEATLAND.****VICE-PRESIDENTS:****ABNER C. GOODELL, JR.**
FREDERICK W. PUTNAM.**DANIEL B. HAGAR.**
ROBERT S. RANTOUL.**SECRETARY:****GEORGE M. WHIPPLE.****TREASURER:****GEORGE D. PHIPPEN.****AUDITOR:****RICHARD C. MANNING.****LIBRARIAN:****CHARLES S. OSGOOD.****COUNCIL:****HENRY M. BROOKS.**
JAMES A. EMMERTON.
WILLIAM H. GOVE.
THOMAS F. HUNT.
DAVID M. LITTLE.**WILLIAM MACK.**
EDWARD S. MORSE.
S. ENDICOTT PEABODY.
DAVID PINGREE.
EDMUND B. WILLSON.**THE RETROSPECT OF THE YEAR,**

compiled from the several reports read at the meeting and remarks of the members in relation thereto, presents the work of the Institute in its various departments since the last annual meeting.

The past year will be specially noted in the annals of the Institute for the removal of the Library and the various collections into our new building, and placing them upon the shelves preparatory to the final classified arrangement, duly labelled and catalogued. The various Regular and Field Meetings have been well attended. The publications have been enriched with valuable historical and scientific papers. Generous donations to the library, cabinet and treasury have been received. The number of visitors to the

Institute is largely on the increase and the year may, with propriety, be called a prosperous one.

FIELD MEETINGS during the past season have been attended with unabated interest. *The first*, on Thursday, July 7, 1887, in the parish of West Gloucester, assembled at the house of Mrs. Maria H. Bray. The members from Salem and Beverly came in an early train; those from Gloucester and vicinity later in the day. The forenoon ramble in the woods, under the guidance of Mrs. Bray and Mr. John H. Sears, was very pleasant and instructive, this being a very favorite haunt for the botanists, and many fine specimens of somewhat rare species were collected, and being exhibited on the table during the afternoon session, furnished a theme for remarks by Mr. Sears.

Mr. Sidney Perley of Boxford spoke of the old parish church, and some of the occupants of its pulpit, who Sunday after Sunday preached to their little flock of worshippers, alluding especially to the Rev. Daniel Fuller, and gave some reminiscences of the various members of the Fuller family in the different lines of descent. He remarked upon the small salaries and the hard times the clergyman of that period experienced. The other speakers were the President, Dr. Conant, president of the Cape Ann Literary and Scientific Society, and Mrs. Bray.

The second meeting was held on Wednesday, Sept. 7, 1887, at Montserrat, on the grounds of Mr. Henry W. Peabody of Salem, a summer resident of this part of Beverly. The forenoon rambles among the hills in that vicinity opened many pleasant views, the ocean on one side and the woody hillsides on the other; and a goodly collection of plants and rocks were obtained for the afternoon session, which commenced at 2.30 o'clock, Vice President Rantoul presiding. Remarks were offered by the chair, by

Messrs. John H. Sears and John Robinson of Salem, Mr. F. A. Ober and Hon. J. I. Baker of Beverly, Hon. N. A. Horton and Dr. G. A. Perkins of Salem. A full report of this meeting has been printed in the Bulletin of the Institute (see Vol. xx, pages 1 to 35).

The third field meeting gathered on Friday, Sept. 16, 1887, at the Bradford Academy, by invitation of Dr. George Cogswell, the President of its Board of Trustees. This was largely attended, lunch being served in a beautiful grove on the Academy grounds, and the afternoon session being held in the large hall of the Academy, at 2.30 o'clock, the President in the chair. Vice President Rantoul spoke of the early lyceums of the county, followed by Dr. George Cogswell, Dr. William Cogswell, J. N. Carlton, all of Bradford, Vice President A. C. Goodell, jr., Gen. William Cogswell, M. C., G. D. Phippen, Hon. N. A. Horton and Mr. John Sears of Salem, who made interesting remarks on the special subjects in which the individual speakers were interested. An extended report of this meeting has been printed in the Bulletin of the Institute (see Vol. xx, pp. 36 to 44).

MEETINGS. Regular meetings were held on the first and third Monday evenings of each month. At these, the following communications were made and lectures delivered:

Rev. D. P. Noyes of South Byfield read a paper entitled "The Fathers of our Forefathers." He traced the rise and progress of the Puritan spirit in England from the time of Queen Mary and Queen Elizabeth and the sojourn of our ancestors in Holland to the arrival of the Pilgrims at Plymouth and the Puritans in Massachusetts Bay.

Later, *Rev. Mr. Noyes* read another paper "On the Character and Career of Gov. John Winthrop."

In commemoration of Forefathers' Day, Dec. 19, 1887, Mr. Rantoul read an interesting letter from Mr. Thomas Spencer of England, for some years a resident of Salem and one of the original members of the Natural History Society, 1834-8, addressed to the President in 1869, describing two visits he had made to Scrooby, the home of the Pilgrims; conversation followed by Messrs. T. F. Hunt, John Robinson, George D. Phippen, Fielder Israel and Henry M. Brooks (see Bulletin, Vol. xx, p. 55).

Prof. F. W. Putnam, of Cambridge, lectured on "The Serpent Mounds of the Ohio Valley."

Mr. Shebnah Rich, of Salem, read an essay "On Wendell Phillips."

Dr. David Coggin read a paper entitled "Nine Hundred Leagues West of Cape Malabar."

Rev. H. W. Perris, of Hull, Eng., discoursed on "Some Eminent Englishmen."

Gen. William Cogswell discussed "The Fishery Question."

Robert Rayner followed on "The Fishery Question."

Robert S. Rantoul contributed "Negro Slavery in Massachusetts." Portion of a paper read before the Beverly Lyceum, April, 1833, by Robert Rantoul, sr.¹

Wellington Pool, of Wenham, furnished "Inscriptions from the old Burying-ground in Dodge's Row (North Beverly)."²

Cecil Hampden Cutts Howard, of New York, sent a "Sketch of Mrs. William Jarvis of Weathersfield, Vermont, by Mrs. Mary Pepperell Sparhawk Jarvis Cutts."³

Rev. E. P. Crowell, of Amherst, contributed "An Epi-

¹See Hist. Coll. Essex Institute, Vol. XXIV, p. 81.

²See Hist. Coll., Vol. XXIV, pp. 123, 206.

³See Hist. Coll., Vol. XXIV, p. 109.

cedium composed in 1752, by Rev. John Cleaveland of Chebacco (now Essex), in Ipswich, Mass."⁴

John T. Moulton, of Lynn, contributed "Inscriptions from the old Burying-ground at Lynnfield Centre."⁵

A. A. Galloupe, of Beverly, furnished "Pay roll of Capt. Jn^o. Dodge's Company of Guards; found among the papers of Enos Gallop, 1834."⁶

"Salem Military Company—Names of the Vollunteer Artillery Corps."⁷

Nathan M. Hawkes, of Lynn, contributed "Gleanings relative to the family of Adam Hawkes, one of the early settlers of the third plantation of Massachusetts Bay."⁸

John H. Gould, of Topsfield, furnished "Early Records of the church in Topsfield."⁹

John Price, of Manchester, contributed the "Genealogy of the Allen family of Manchester, Mass., from the earliest settlement to the year 1886."¹⁰

Samuel Garman, of Cambridge, "Reptiles and Batrachians from Texas and Mexico."¹¹

"An Andean Medal."¹²

Samuel Kneeland, of Boston, "On the Santhals, a semi-barbarous tribe of Northeastern Bengal."¹³

Robert S. Rantoul, "Our new domain," part I.¹⁴

James F. Almy, "History of Methodism in Salem."¹⁵

Hon. Eben F. Stone, of Newburyport, "Sketch of Tristram Dalton, a son of Essex County and one of the two Massachusetts Senators in the first Congress of the United States."⁶

⁴ See Hist. Coll., Vol. xxiv, p. 140.

⁶ See Hist. Coll., Vol. xxiv, p. 157.

⁸ See Hist. Coll., Vol. xxiv, p. 161.

¹⁰ See Hist. Coll., Vol. xxiv, pp. 223, 302.

¹² See Bulletin, Vol. xx, p. 57.

¹⁴ See Hist. Coll. Vol xxiv, p. 241.

⁵ See Hist. Coll., Vol. xxiv, p. 146.

⁷ See Hist. Coll., Vol. xxiv, p. 160.

⁹ See Hist. Coll., Vol. xxiv, p. 181.

¹¹ See Bulletin, Vol. xix, p. 119.

¹³ See Bulletin, Vol. xix, p. 95.

¹⁵ See Hist. Coll., Vol. xxiv, p. 275.

¹⁶ See Hist. Coll., Vol. xxv, p. 1.

LIBRARY:—The additions to the Library for the year (May, 1887, to May, 1888) have been as follows :

By Donation.

Folios,	101
Quartos,	174
Octavos,	678
Duodecimos,	303
xvimos,	89
xxivtos,	55
Total of bound volumes,	1,400
Pamphlets and serials,	6,435
Total of donations,	7,835

By Exchange.

Folios,	2
Quartos,	29
Octavos,	195
Duodecimos,	11
xvimos,	14
xxivtos,	2
Total of bound volumes,	253
Pamphlets and serials,	2,744
Total of exchanges,	2,997

By Purchase.

Octavos,	42
Duodecimos,	3
xvimos,	3
Total of bound volumes	48
Pamphlets and serials,	517
Total of purchases,	565
Total of donations,	7,835
Total of exchanges,	2,997
Total of purchases,	565
Total of additions,	11,397

Of the total number of pamphlets and serials, 2,301 were pamphlets and 7,395 were serials.

The donations to the Library for the year have been received from one hundred and fifty-three individuals and sixty-three societies and governmental departments. The exchanges, from ten individuals and one hundred and eighty

societies and incorporated institutions of which ninety-seven are foreign ; also from editors and publishers.

The Library has still further been increased by a collection of about six hundred volumes, not included in the above enumeration, which has been received *on deposit* for reference only, from the Independent Congregationalist Society, Barton Square.

Mr. T. F. Hunt and Dr. S. A. Green of Boston have increased the donations by hundreds of bound volumes and pamphlets, and gifts of large numbers of books have been received from the Peabody Academy of Science, Rev. E. C. Bolles, D.D., Mr. George S. Silsbee and Mr. Edward C. Browne. Mrs. R. Anne Nichols of Roxbury has generously remembered us with many rare and extra-illustrated works.

The Library is greatly indebted to Hon. William C. Endicott, for placing the Institute on the list of societies to receive the publications of the various offices of the War Department, the advantage of which has already been appreciated.

The Story and Peabody Libraries, enumerated in last year's report, were very rich in unbound numbers of periodical, art and illustrated works, of sufficient value to repay the increased cost of binding. They now form a valuable addition to the shelves.

Since the last annual meeting the main library has been placed on the shelves in the new building, but has not wholly recovered from the confusion necessarily incident to its removal. The western half of the second story is devoted to works of an historical character which have been classified by a modification of the Dewey System. The shelves in the eastern half are allotted to works of literature and the fine arts. As soon as the Art Library is arranged, which it is hoped a few weeks' labor will complete,

all books on this floor, not restricted to reference, will be ready for circulation.

In the third story, the western suite of rooms is filled with works on philosophy and religion; while science has its place in the eastern half. These books, it is hoped to add to the circulation, without great delay.

The department of sociology is to remain in Plummer Hall, as are also the larger part of the collection of pamphlets, and the most of the newspapers, save those of Essex County.

The improved accommodations furnished by our new quarters have been thoroughly appreciated during the past year. When all departments are in complete working order the efficiency of the Library will be greatly increased.

WM. P. UPHAM,
Librarian.

Donations or exchanges have been received from the following sources :

	Vols.	Pam.
Abbott, Miss Helen C. DeS., Philadelphia, Pa.,	9	
Adelaide, Royal Society of South Australia,	1	
Albany, N. Y., Albany Institute,	1	
Albany, New York State Library,	11	
Albany, New York State Museum of Natural History,	2	4
Alnwick, Eng., Berwickshire Naturalists' Club,		4
American Academy of Arts and Sciences,	1	3
American Association for the Advancement of Science,	1	66
American Microscopical Journal,		1
American Ornithologists' Union,		4
Ames, George L.,		1
Ames, John G., Washington, D. C.,		2
Amherst College,		2
Anagnos, M., So. Boston,		1
Andover Theological Seminary Library,		1
Andrews, William P.,		106
Association géodésique internationale commission de la Norvège,		2

Augsberg, Naturhistorischer Verein,	1	
Averille, A. A.,		1
Bailey, Miss M. O., Dorchester,		2
Baldwin, Charles C., Cleveland, O.,	1	
Baltimore, Maryland Historical Society,	1	2
Baltimore, Md., Johns Hopkins University,		14
Baltimore, Md., Peabody Institute,		1
Bamberg, Naturforschende Gesellschaft,		1
Batavia, K. N. Vereeniging in Nederlandsch Indie,	1	
Battell, Robbins, } Battell, Miss Anna, } Norfolk, Ct.,	1	
Belfast, Naturalists' Field Club,		1
Bent, S. Arthur, Boston,		1
Bergen, Bergenske Museum,	1	
Berkeley, University of California,		18
Berlin, Gesellschaft naturforschender Freunde,		1
Berlin, Verein zur Beförderung des Gartenbaues,		24
Bern, Naturforschende Gesellschaft,		1
Bolles, Rev. E. C., D.D.,	54	264
Bologna, R. Accademia delle Scienze,		1
Bonn, Naturhistorischer Verein,	1	1
Bordeaux, Académie Nationale des Sciences, Belles-Lettres et Arts,	1	
Boston, Appalachian Mountain Club,		1
Boston Board of Health,		12
Boston, City of,	6	
Boston City Hospital,	1	
Boston, Massachusetts General Hospital,		1
Boston, Massachusetts Historical Society,	2	
Boston, Massachusetts Horticultural Society,		2
Boston, Maverick National Bank,	1	
Boston, Museum of Fine Arts,		1
Boston, National Association of Wool Manufacturers,	1	3
Boston, New England Historic Genealogical Society,		29
Boston Public Library,		3
Boston Scientific Society,		1
Boston Society of Natural History,		10
Bowen, Clarence W., New York, N. Y.,		2
Braunschweig, Verein für Naturwissenschaft,		2
Bremen, Naturwissenschaftlicher Verein,		3
Briggs, N. A., Shaker Village, N. H.,		12
Bristol, Eng., Naturalists' Society,		1
Brooklyn, N. Y., Brooklyn Library,		2
Brooklyn, N. Y., Long Island Historical Society,		1

Brooks, Henry M.,	3	63
Brown, E. O., Chicago, Ill.,		1
Brown, Henry A.,	7	15
Browne, Edward C.,	50	260
Brunswick, Me., Bowdoin College,		1
Bruxelles, Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique,	6	
Bruxelles, Société Belge de Microscopie,	1	10
Bruxelles, Société Entomologique,	1	1
Bruxelles, Société Royale Malacologique de Belgique,	1	11
Buenos Aires, Sociedad Científica Argentina,		11
Buffalo, N. Y., Buffalo Library,		1
Buffalo, N. Y., Historical Society,		2
Burham, J. H., Bloomington, Ill.,		1
Burns, Charles E.,	1	
Calcutta, Geological Survey of India,	1	6
Cambridge, Harvard University,	2	4
Cambridge, Museum of Comparative Zoölogy,	2	7
Cambridge, Peabody Museum of American Archæology and Ethnology,		3
Canada Royal Society,	1	
Champaign, Ill., State Laboratory of Natural History,	1	6
Charleston, S. C., Elisha Mitchell Scientific Society,		6
Charleston, S. C., Elliott Society,		1
Chever, Edward E., San Francisco, Cal.,		2
Chicago, Ill., Newberry Library,		1
Chicago, Ill., Public Library,		1
Churchill, John F., London,		2
Chute, William E., Port Huron, Mich.,	9	
Cincinnati, Ohio Historical and Philosophical Society,		1
Cincinnati, Ohio Mechanics' Institute,		1
Cincinnati, O., Society of Natural History,		3
Cleveland, H. W. S., Chicago, Ill.,		3
Cleveland, O., Western Reserve and Northern Ohio His- torical Society,		4
Cogswell, William,	2	153
Colburn, Jeremiah, Boston,		2
Cole, Mrs. N. D., Newspapers,		16
Conant, F. O., Portland, Me.,	1	
Coolidge, T. Jefferson, Boston,	1	
Copenhagen, Académie Royale,		2
Copenhagen, Société Botanique,		1
Copenhagen, Société Royale des Antiquaires du Nord,		2
Cordoba, Academia Nacional de Ciencias,		5

Crowell, Rev. E. P., Amherst,		1
Culin, Stewart, Philadelphia, Pa.,		2
Curwen, George R.,	4	29
Cutter, Abram E., Charlestown,		1
Dakota, Department of Immigration,	1	1
Daniels, Mrs. Charles H., Newspapers,		
Danvers, Peabody Institute,		1
Danzig, Naturforschende Gesellschaft,		2
Darling, Charles W., Utica, N. Y.,		4
Darmstadt, Verein für Erdkunde,		1
Dawson, C. C., Lowell,	2	1
Dawson, William, Montreal,		1
Deane, L., Washington, D. C.,		1
Deblois, T. M., St. John, N. B., Newspapers,	4	
Detroit, Mich., Public Library,		1
Dodge, James H., Boston,	1	
Dresden, Naturwissenschaftliche Gesellschaft "Isis,"		2
Dublin, Royal Irish Academy,		14
Dublin, Royal Society,		6
Dudley, A. M.,	1	1
Dürkheim, Pollichia, Naturwissenschaftlicher Verein der Rheinpfalz,		1
Ellis, Rev. George E., Boston,	1	
Emden, Naturforschende Gesellschaft,		1
Emerton, James, Newspapers,		
Emmerton, James A., "		56
Erfurt, K. Akademie Gemeinnütziger Wissenschaften,		1
Essex, Eng., Essex Field Club,		11
Evans, John Q., Salisbury,	4	
Everett, William, Quincy,	1	
Exeter, N. H., Phillips Exeter Academy,		3
Falmouth, Eng., Royal Cornwall Polytechnic Society,	1	
Firenze, Biblioteca Nazionale Centrale,		29
Foster, Joseph, London,	1	
Frankfurt-a-M., Senckenbergische Naturforschende Ge- sellschaft,	1	1
Galloupe, A. A., Beverly,	1	
Genève, L'Institut National Genèvois,	1	
Giessen, Oberhessische Gesellschaft für Natur. u. Heil- kunde,		1
Glasgow, Natural History Society,		1
Goodell, A. C., jr., Newspapers,	21	8
Görlitz, Naturforschende Gesellschaft,	1	
Göttingen, K. Gesellschaft der Wissenschaften,	2	

Gould, John H., Topsfield,		2
Granville, O., Denison University,		2
Green, Samuel A., Boston,	100	554
Güstrow, Verein der Freunde der Naturgeschichte,	1	
Halifax, Nova Scotian Institute of Natural Science,		1
Hamburg, Verein für Naturwissenschaftliche Unterhaltung,		1
Harlem, Société Hollandaise des Sciences,		3
Harriman, H. N., Georgetown, Newspapers,		
Hart, Charles Henry, Philadelphia, Pa.,		1
Hartford, Ct., Trinity College,		1
Hill, B. D., Newspapers,		
Hill, William G., Malden,	1	
Hoar, E. R., Concord,		2
Hobart, Tasmania Royal Society,	1	1
Holmes, John C., Detroit, Mich.,	1	
Hotchkiss, Miss, New Haven, Ct., Newspapers,		3
Howard, J. J., Blackheath, Eng.,		1
Hunt, T. F.,	219	234
Iowa City, Iowa Historical Society,		19
Ireson, Mrs. C. K.,		176
Israel, Rev. Fielder, Newspapers,	27	632
James, U. P., Cincinnati, O.,		3
Jewett, Rev. Geo. B., Estate of,	1	
Kaufman, A. C., Charleston, S. C.,		1
Kimball, Mrs. James,		1
Kimball, James P., Washington, D. C.,	2	
King, Rufus, Yonkers, N. Y.,	1	
Kingsley, J. S.,		71
Kjöbenhavn, Botaniske Förening,		1
Kjöbenhavn, K. D. Videnskabernes Selskab,		1
Königsberg, Physikalisch-Oekonomische Gesellschaft,	1	
Lansing, Mich., State Library,	15	11
Lausanne, Société Vaudoise,		2
Lawrence, George N., New York, N. Y.,		4
Lawrence Public Library,		1
Leavitt, Mrs. William,	2	
Lee, Francis H.,	1	57
Lee, S. Ober, Beverly, Newspaper,		
Leeds, Eng., Journal of Conchology,		3
Leeds, Eng., Philosophical and Literary Society,		1
Leeson, J. R., Boston,		1
Le Mans, Société d'Agriculture, Sciences et Arts de la Sarthe,		2

Lewis, J. W., & Co., Philadelphia, Pa.,	2	
Liège, Société Royale des Sciences,	1	
Lincoln, Francis H., Boston,		1
Livermore, Rev. S. T., Bridgewater,	1	
London, Royal Society,		12
Lowell, Old Residents' Historical Association,		1
Lund, L' Université Royale,	5	
Lüneburg, Naturwissenschaftlicher Verein,		1
Luxembourg, Institut Royal Grand-Ducal,		2
Lynn Public Library,		1
Macfie, R. A., Neston, Chester,	2	1
Mack, Miss Esther C., Estate of,	156	320
Madison, Wis., State Historical Society,	1	2
Madrid, Sociedad Española de Historia Natural,		3
Manning, Mrs. R. C.,	19	29
Manning, Robert,	1	970
Marburg, Gesellschaft zur Beförderung der gesammten Naturwissenschaften,		3
Marshall, John W., Rockport,		1
Massachusetts Medical Society,		2
Massachusetts, Secretary of the Commonwealth of,	9	1
Massachusetts State Board of Health,	1	49
McDaniel, Rev. B. F., San Diego, Cal., Newspapers,		
Merrill, William, jr., West Newbury,		5
Metz, Société d'Histoire Naturelle,		2
Mexico, Museo Nacional,		3
Michigan Agricultural College,	1	48
Middlebury, Vt., Historical Society,		1
Minneapolis, Minnesota Geological and Natural History Survey,	1	3
Montreal, Can., Natural History Society,		4
Moore, H. H., San Francisco, Cal.,	24	93
Morehead, Mrs. L. M., Cincinnati, O.,	1	
Morse, E. S.,	6	32
München, K. b. Akademie der Wissenschaften,		16
Münster, Westfälische Provinzial Verein,		1
Napoli, R. Accademia delle Scienze Fisiche e Matematiche,		9
Nashville, Tenn., State Board of Health,		9
Neuchâtel, Société des Sciences Naturelles,	1	
Nevins, W. S., Newspapers,		8
Newark, New Jersey Historical Society,		2
New Haven, Ct., N. H. Colony Historical Society,	1	
New Haven, Ct., Yale University,	2	2
Newport, R. I., Redwood Library,		1

New York, N. Y., Academy of Sciences,	1	9
New York, N. Y., American Geographical Society, .		7
New York, N. Y., Astor Library,		1
New York, N. Y., Chamber of Commerce,	2	
New York, N. Y., Genealogical and Biographical Society,		4
New York, N. Y., Historical Society,	1	
New York, N. Y., Mercantile Library Association, .		2
New York, N. Y., Microscopical Society,		6
Nichols, Andrew, jr., Danvers,		19
Nichols, Mrs. R. Anne, Roxbury,	65	
Northampton, Smith College,		1
Northend, William D.,	3	56
Northern Pacific Railway,		3
Norwegian North Atlantic Expedition,	2	
Nourse, Miss Dorcas C.,	1	
Nurnberg, Naturhistorische Gesellschaft,		1
Oliver, Mrs. Grace A., Boston,	7	
Omaha, Neb., Board of Trade,		2
Omaha, Neb., State Historical Society,	1	
Osgood, G. F., Peabody,		74
Packard, A. S., Providence, R. I.,		2
Palermo, R. Accademia di Scienze, Lettere e Belle Arti,	1	
Palfray, Charles W., Newspapers,		321
Paris, Société d'Acclimatation,		14
Paris, Société d'Anthropologie,		4
Peabody, John P., Newspapers,		
Peabody, Mrs. Martha,	46	
Peet, Rev. S. D., Mendon, Ill.,		7
Perkins, George A., Newspapers,		15
Perley, Sidney, Boxford, Newspapers,		8
Philadelphia, Pa., Academy of Fine Arts,	1	1
Philadelphia, Pa., Academy of Natural Sciences, . .		3
Philadelphia, Pa., American Philosophical Society,		2
Philadelphia, Pa., Historical Society,		4
Philadelphia, Pa., Library Company,		2
Philadelphia, Pa., Wagner Free Institute of Science, .	1	
Philadelphia, Pa., Zoölogical Society,		1
Phillips, Stephen H.,	2	
Pickering, Grandchildren of the late John,	1	
Pillsbury, Parker, Concord, N. H.,		1
Plumer, Miss Mary N., Newspapers,	5	15
Pool, Wellington, Wenham,		2
Porter, Rev. Aaron, Newspapers,		
Porter, Joseph W., Bangor, Me.,		2

Portland, Maine Historical Society,		1
Poughkeepsie, N. Y., Vassar Brothers' Institute,	1	
Providence, Rhode Island Historical Society,		1
Providence, R. I., City of,	1	
Providence, R. I., Narragansett Historical Publishing Company,		1
Providence, R. I., Public Library,	1	1
Putnam, Elbridge G., Philadelphia, Pa,	4	1
Putnam, F. W., Cambridge,		3
Putnam, George G.,	12	
Quebec, Can., Literary and Historical Society,		5
Rantoul, Robert S., Newspapers,	4	38
Rayner, Robert,	2	1
Reeve, J. T., Appleton, Wis.,	2	1
Regensburg, K. B. B. Gesellschaft,	1	
Regensburg, Naturwissenschaftlicher Verein,	1	
Rich, Shebnah,	1	
Riga, Naturforschender Verein,		1
Roberts, J. K.,	1	
Roberts, Miss M. L.,		12
Robinson, John, Newspapers,	16	53
Roma, Biblioteca Nazionale Centrale Vittorio Emanuele,		4
Romero, M., Washington, D. C.,	1	
Ropes, Charles A.,	2	
Ropes, Reuben W., Brooklyn, N. Y.,		1
Ropes, Willis H., Newspaper,	1	
Sacramento, Cal., State Library,		1
Sacramento, Cal., State Museum,	1	
St. Gallen, St. Gallische Naturwissenschaftliche Gesell- schaft,	1	
St. John, New Brunswick Natural History Society,		1
St. Louis, Mo., Public Library,		1
St. Paul, Minn., Chamber of Commerce,		1
St. Paul, Minn., Historical Society,	2	
St. Pétersbourg, Académie Impériale des Sciences,		17
St. Pétersbourg, Jardin Botanique Impérial,		1
St. Petersburg, Societas Entomologica Rossica,	1	
Salem, Peabody Academy of Science, Newspapers,	115	206
San Francisco, California Academy of Sciences,		12
San Francisco, Cal., Historical Society,		2
San Francisco, Cal., Mercantile Library Association,		1
San Francisco, Cal., Society of California Pioneers,		1
San Francisco, Cal., State Mining Bureau,		4
Sawyer, Samuel E., Gloucester,	1	

'SGravenhage, Nederlandsche Entomologische Vereeniging,		2
Shanghai, China Branch of the Royal Asiatic Society,		3
Silsbee, George S.,	89	
Smith, A. Aug., Newspapers,		
Smith, B. G., Cambridge,	1	
Smith, George Plumer, Philadelphia, Pa.,	4	
Smith, Robert B., North Andover,		1
Society for propagating the Gospel among the Indians,	1	
Springfield, Ill., State Board of Agriculture,		1
Stearns, W. A., Cambridgeport,	4	6
Stettin, Entomologischer Verein,	1	
Stickney, George A. D.,	5	1
Stickney, Joseph A., Great Falls, N. H.,	1	
Stickney, Walter J., Newspaper,		
Stockholm, Société Entomologique,		3
Stone, Arthur R.,	1	
Stone, Miss Mary H.,		52
Stone, Robert, Newspapers,		
Sutro, Theodore, New York, N. Y.,	1	
Sydney, Linnean Society of New South Wales,		3
Sydney, Royal Society of New South Wales,	1	
Tasmania, Government of,	1	
Taunton, Eng., Somersetshire Archæological and Natural History Society,	1	
Taunton Public Library,		2
Thayer, Miss C. C., Roxbury,	1	
Throldhem, K. N., Videnskabers-Selskab,		1
Tilton, John P.,	2	6
Topeka, Kan., Academy of Science,	1	
Topeka, Kan., Historical Society,		1
Topeka, Kan., Washburn College Laboratory of Natural History,		1
Toronto, Canadian Institute,		3
Turner, J. Horsfall, Bradford, Eng.,		10
Unknown,	3	12
Upham, F. K., Fort Custer, Mon.,	1	
Upsal, Societas Scientiarum,		1
U. S. Adjutant General,	2	1
U. S. Bureau of Education,	4	1
U. S. Bureau of Ethnology,	1	5
U. S. Bureau of Military Justice,		1
U. S. Bureau of Navigation,	2	
U. S. Chief of Engineers,	7	

U. S. Chief of Ordnance,	7	
U. S. Chief Signal Officer,	23	194
U. S. Comptroller of the Currency,	2	
U. S. Department of Agriculture,		1
U. S. Department of the Interior,	96	2
U. S. Department of State,	1	21
U. S. Fish Commission,	3	
U. S. Geological Survey,	3	6
U. S. Life Saving Service,	1	
U. S. National Museum,		9
U. S. Naval Observatory,	1	
U. S. Patent Office,	2	55
U. S. Paymaster General,		3
U. S. Quartermaster General,	7	4
U. S. Surgeon General,	14	22
U. S. Treasury, Secretary of,	3	
U. S. War Department,	5	
Vary, Samuel W., Annapolis, Md.,		14
Vose, George L., Boston,	1	
Walker, Benjamin, Lowell,		1
Washington, D. C., Anthropological Society,		1
Washington, D. C., Smithsonian Institution,	3	1
Watanabe, H., Tokyo, Japan,	1	
Waters, H. F., London, Newspapers,		7
Waters, E. Stanley, Minneapolis, Minn.,		1
Waters, J. Linton, Newspapers,	2	25
Waterville, Me., Colby University,		4
Watson, S. M., Portland, Me.,		3
Weske, Stephen B., Chapel Hill, N. C.,		3
Weich, W. L., Newspapers,	14	3
Wharton, Francis, Washington, D. C.,	3	
Wheatland, Miss Elizabeth,		13
Wheatland, Henry,	124	27
Whipple, George M.,	25	431
Whitcher, William F., Boston,		1
Whitmore, William H., Boston,	1	
Whitney, Mrs. Henry M., Lawrence, Newspapers,		61
Wien, E. k. z. Böhmische Gesellschaft,		4
Wiel, Verein zur Verbreitung Naturwissenschaftliche Kenntnisse,		1
Wiesbaden, Kassauischer Verein für Naturkunde,	1	
Wilson, Rev. E. B., Newspapers,		222
Wilson, Mrs. E. B.,		9
Wilmington, Delaware Historical Society,	1	

Winnipeg, Manitoba Historical and Scientific Society, .	9
Winsor, Justin, Cambridge,	39
Winthrop, Robert C., Boston,	1
Winthrop, Robert C., jr., Boston,	1
Worcester, American Antiquarian Society,	2
Worcester, Society of Antiquity,	1
Wright, Frank V.,	1 3
Wright, W. H. K., Plymouth, Eng.,	23
Wurzburg, Physikalisch-medicinische Gesellschaft, .	1 1

The following have been received from editors or publishers :

American Exchange and Mart.	Naturalists' Leisure Hour and Monthly Bulletin.
American Journal of Science.	Nature.
American Naturalist.	New England Magazine.
Appleton's Literary Bulletin.	Open Court, The.
Cape Ann Advertiser.	Our Dumb Animals.
Chicago Journal of Commerce.	Peabody Press.
Danvers Mirror, The.	Peabody Reporter.
Fireside Favorite, The.	Sailors' Magazine and Seamen's Friend.
Gardener's Monthly and Horti- culturist.	Salem Daily Sun.
Georgetown Advocate.	Salem Evening News.
Groton Landmark.	Salem Gazette.
Ipswich Chronicle.	Salem Observer.
La Bibliophilie.	Salem Register.
Lawrence American.	Salem Times.
Le Naturaliste Canadien.	Standard, The.
Lynn Bee, The.	Statesman, The.
Martha's Vineyard Herald.	Traveller's Record.
Musical Herald.	Turner's Public Spirit.
Musical Record.	Voice, The.
Nation, The.	Zoologischer Anzeiger.

THE MUSEUM. The donations to the Museum during the year number 185, presented by 53 donors. The specimens in natural history, including those in archæology which have been received during the year, have been placed on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. Those of an historical character, or which possess an ar-

tistic interest, have been placed in the rooms of Daland House and have been received from the following contributors :

Lucy Hood, old baptismal blankets; Chas. O. and Wm. L. Welch; Joseph B. F. Osgood; L. E. Millea, ornamental Lantern for hall of Institute Building; Jacob H. Medairy, Baltimore, Md.; Chas. W. Palfray, silhouette of Rev. Dr. Hopkins; David G. Yates, Philadelphia, Pa.; John W. Hart; John Robinson; Chas. E. Whittredge; J. Linton Waters; Edw. C. Browne; Mrs. Maria H. Bray, West Gloucester, an old pewter Communion Service; Wm. D. Dennis; Peabody Academy of Science; Robt. S. Rantoul; Mrs. C. K. Ireson; Geo. W. Pousland; Geo. A. Carey; John H. Sears; Chas. E. Trow; Mrs. Carrie Burbank; H. M. Brooks; Wm. J. Walton; Miss Mary R. Kimball; Mrs. Chas. Osgood; Wm. L. Kinsman; Mrs. H. M. Brooks; T. F. Hunt; Charlotte A. L. Sibley, Groton; Miss Mary Otis Bailey, Dorchester, valuable old Hathorne deeds and other papers, etc.; Frederick Lamson; Chas. A. Ropes; Jos. L. Lougee, map of Salem, 1820; Miss E. M. R. Brooks, old fashioned rubber shoes; Ross Turner, ancient fire-dogs, etc.; Miss Abby E. Cleveland, Poughkeepsie, N. Y., copy of Covenant of Second Church in Ipswich; John H. Nichols, sea journal of Sch. Betsey, 1793; Co. F., 23 Regt. Mass. Volunteers, original Roll-book, 1861-4; A. Aug. Smith, seventy-three bills of school teachers in Salem, 1791 to 1830, etc.; Frank V. Wright; Frederick P. Porter; Chas. Baker; Mrs. Paul P. Patten; John T. Brown, Newburyport; Rev. Thos. R. Pynchon, Hartford, Conn.; David Moore, Commission and Seal of Nova Scotia Justice Benijah Collins.

A life-like portrait in oil of the President of the Essex Institute by Frederick P. Vinton, has been presented by Messrs. Stephen G. Wheatland and George Wheatland, jr.

AN EXHIBITION of roses was held on June 23, 1887. There were thirty contributors. Awards were made to J. B. F. Osgood, T. D. Williams, and John M. Ward, of Peabody for exhibits of special excellence.

The collection included also other flowers; a handsome bank of pansies with a border of ferns was shown by Jas. F. Almy; S. P. Fowler, of Danvers, exhibited an exceptionally fine spray of magnolias; some particularly large "Improved Nymphæa" were from Mrs. Geo. R. Emmerton,

and some very fine specimens of hydrangea and agapanthus from Miss E. Ropes; all of whom received "honorable mention" as well as the following persons: Wm. J. Foster, C. H. Fifield, Mrs. T. N. Covelle, W. K. Bigelow, Miss Gertrude Richardson, Mrs. D. A. Varney, Miss Hannah Rose and John Robinson.

The building now occupied by the Institute was formally opened for the inspection of members and their families on the afternoon and evening of June 20. The rooms were decorated with flowers, and foliage plants, and refreshments were served during the evening. The visiting members and friends numbered 375.

The number of visitors to the First Meeting House during the year was 6,706.

TREASURER'S REPORT. — Receipts and expenditures of the past year (condensed from account presented).

RECEIPTS.

For balance of last year's account,	\$4,458 97
" amount to be invested,	101 67
" assessments of members,	\$867 00
" income of invested funds,	2,851 00
" sale of publications,	339 80
" return tax from the state,	36 09
" amount from various sources,	195 00
	<hr/>
Net income,	\$4,288 89
" amount from donors to Daland house fund,	\$16,617 91
	<hr/>
	<u>\$25,467 44</u>

EXPENDITURES.

By investment of legacy of Esther C. Mack,	\$4,120 84
" investment of extra income from legacy of Martha G. Wheatland,	1,031 25
" invested deposit in Five Cents Savings Bank,	101 67
" deposit of interest of Derby Fund,	38 22
" investment of stock rights, seven shares,	644 00
	<hr/>
Amt. invested,	\$5,935 98

<i>Amt. bro't forward,</i>		\$5,935.98
By salaries of secretary, assistant-librarian and janitor,	1,952 00	
" publications and printing,	1,028 19	
" books, binding and miscellaneous printing,	639 29	
" fuel, gas, stationery, expressage, etc.,	343 31	
" Salem Athenæum, portion of repairs,	146 31	
" insurance and interest,	231 00	
" city tax,	22 40	
" annuities (with legacies),	210 00	
Net expense,		\$4,572 50
By Daland house expenses, viz.,		
" alterations of the building,	\$8,366 13	
" furnishings,	3,394 74	
" city tax,	21 70	
" moving books,	169 41	
" labor of assistants,	258 30	
" fire insurance,	307 25	
" repairs at Plummer Hall, publishing, etc.,	1,853 16	
Balance on hand		14,370 69
		588 27
		<u>\$25,467 44</u>

May 21, 1888.

Respectfully submitted,

GEO. D. PHIPPEN, *Treasurer.*

Audited.—General accounts by R. C. MANNING, *Auditor*; and Daland House accounts by T. F. HUNT, *Chairman.*

DALAND HOUSE FUND. —The remodeling and furnishing of Daland House, purchased for the better accommodation of the library and collections, required the expenditure of a larger sum than the society had at its disposal and an honorary committee undertook the responsible task of securing the necessary funds. The following gentlemen constituted the

Honorary Committee on Daland House Fund :—

S. E. PEABODY, *Chairman.*

James B. Curwen,	E. S. Morse,	Geo. B. Loring,
E. S. Atwood,	T. F. Hunt,	H. W. Peabody,
E. B. Willson,	Wm. Cogswell,	John Robinson,
R. C. Manning,	Geo. B. Ives,	Chas. S. Osgood,
W. D. Northend,	F. Israel,	Geo. D. Phippen,
A. L. Huntington,	C. A. Ropes,	J. F. Almy,
S. G. Wheatland,	L. F. Brigham,	F. W. Putnam,
F. R. Kimball,	D. B. Hagar,	Jos. F. Dane,
A. H. Johnson,	D. Pingree,	Wm. Mack,
W. P. Upham,	E. C. Bolles,	J. A. Emmerton,
B. F. McDaniel,	G. R. Emmerton,	G. P. Messervy,
J. P. Cook,	Francis Cox,	Geo. Wheatland, jr.

These gentlemen, through sub-committees of their own number, promptly and successfully discharged their function, and the appeal of their sub-committee on subscriptions called forth the liberal response indicated in the subscription list herewith printed in full. The appeal contained among other statements the following passages :

"The following abstract of the report of a sub-committee of the Directors will indicate the changes proposed :—on the first floor, a large room 40 by 18 for meetings and social gatherings ; an office or reception room ; a room for the publications of the society ; an historical museum room ; a fire-proof room for manuscripts and valuable documents ; toilet rooms ; etc. On the second floor : a commodious, convenient and well-lighted double room for a general reading room, which is to contain the current reviews, periodicals, magazines, newspapers and books of reference ; a room for the Story library ; separate rooms for special libraries, with tables and conveniences for readers and students ; and a fire-proof room for the collection of war relics. On the third floor : special library rooms, and stacks for books and printed matter, but not of such general interest as the libraries located in the second story. Attic and basement, for duplicates and general storage purposes. Certain slight alterations to be made in the house, besides building a new stairway and rendering fire-proof certain rooms in the brick addition. The library and reading rooms to be neatly furnished, and so arranged as to be attractive for members and others visiting them, and the additional advantages to be given to the members of the Institute will be such, that a large increase of membership will probably follow the proposed change. It is estimated that the sum of fifteen thousand dollars will cover all the expenses proposed in the foregoing plan, besides providing a sum sufficient to pay the extra running expenses for the next three years ; also for

the purchase of new books, works of reference relating to history, science and art, and furnishing the reading rooms with a selection of the best reviews, magazines, weekly and daily papers, English and American, for the use of members.

"A considerable portion of the acquired funds of the Institute has been invested in the purchase of this estate and it becomes necessary to appeal to all interested in promoting its objects and purposes, for financial aid, that the necessary funds may be raised to make the proposed alterations, and to assure the successful carrying on of the work of the Institute. It is confidently believed that in a few years the Institute, with the increased capacity for usefulness which will follow the proposed change, with largely augmented membership, and with the funds which are sure to come to such an institution when fixed on a stable and lasting basis, will be in a condition to carry on its work in a manner which will be creditable alike to its members and to the city. As stated by the committee, the sum of about \$15,000 will be needed to make the proposed alterations and provide for the necessarily increased running expenses of the institution for the next three years. This sum is to be placed in the hands of Trustees and is to be expended only for the purposes here indicated, the expenses of the regular work of the Institute being met from the income of its present fund. One-half of this sum, it is hoped, will be pledged at once, so that there will be no delay in the proposed refitting of the building. An appeal is now made for funds with the belief that the Institute has fairly earned the right to ask for the generous consideration of all interested in its objects. It has from a comparatively small beginning, through the earnest work of its founders and promoters, attained a wide and enviable reputation at home and abroad. By its publications and meetings it has awakened

an interest in historical and scientific pursuits throughout the county and has brought together within reach of the student and investigator, an invaluable collection of material otherwise unattainable. The value of such an institution to any community can hardly be overestimated.

"In response to the appeal as herein set forth, it is hoped that the friends of the Institute, whether inhabitants of Essex County or belonging to that numerous class fondly designated as 'the Salem people abroad,' will give their aid to accomplish this end. A home of its own has been secured and it now devolves upon its friends and well wishers to fit it for occupancy, for the benefit of all. In the new building can be gathered and preserved the records and relics of the old families of the county, the portraits that have been handed down from generation to generation, the histories of cities and towns,—in fact all that pertains to the old life and the new, of the county. Past experience justifies the belief that, with a rallying centre so stable, there will be a constant influx of books, manuscripts, works of art, things new and old; a collection that will please the curious, delight the antiquarian, instruct the student and historian, and benefit every class in the community."

To this appeal, a prompt and generous response was made as follows:

DONORS TO THE DALAND HOUSE FUND.

From Mrs. Susan S. Kimball,	. . .	\$ 200 00
" Mrs. Grace A. Oliver,	. . .	50 00
" Col. T. W. Higginson,	. . .	5 00
" John C. Holmes, Detroit,	. . .	5 00
" Mrs. Nancy D. Cole,	. . .	1,000 00
" Rev. E. B. Willson,	. . .	100 00
" George C. Lee, Boston,	. . .	100 00
" James Davis, Gloucester,	. . .	1 00

From A. W. Warren, Danversport, . . .	5 00
“ Francis H. Lee,	100 00
“ Mrs. Anna M. Pingree,	500 00
“ David Pingree,	500 00
“ William G. Saltonstall, Boston, . . .	100 00
“ Mrs. William G. Saltonstall, Boston, .	100 00
“ Mrs. Mary A. Saunders,	100 00
“ William L. Ropes, Andover,	1 00
“ a friend,	50 00
“ Mrs. W. Geo. Webb,	500 00
“ a friend,	200 00
“ Richard D. Rogers,	200 00
“ a friend,	10 00
“ William P. Andrews,	5 00
“ George M. Whipple,	25 00
“ a friend,	100 00
“ William D. Pickman,	200 00
“ a friend,	25 00
“ John W. Masury, } Centre Moriches, N.Y.	50 00
“ Thomas B. Masury, }	50 00
“ W. P. Conant,	15 00
“ Charles L. Pierson, Boston,	100 00
“ a friend,	5 00
“ a friend,	500 00
“ J. Ingersoll Bowditch, Boston, . . .	200 00
“ a friend,	5 00
“ a friend,	10 00
“ a friend,	25 00
“ Almy, Bigelow & Washburn,	100 00
“ Charles H. Miller,	300 00
“ William G. Webber,	25 00
“ Mrs. Louisa Manning,	50 00
“ a friend,	100 00
“ George P. Smith, Philadelphia, . . .	50 00

From Benjamin J. Lang, Boston,	10 00
“ Arthur L. Goodrich,	10 00
“ Mrs. A. M. Wheatland,	500 00
“ Ripley Ropes, Brooklyn,	100 00
“ George Wheatland, jr.,	250 00
“ Mrs. Sarah Orne Russell,	150 00
“ friends,	650 00
“ Sarah B. Fettyplace, Greenfield,	50 00
“ an old friend,	20 00
“ N. F. Safford, Milton,	15 00
“ John H. Silsbee,	50 00
“ W. H. Gove,	10 00
“ a friend,	10 00
“ A. A. Low, New York, N. Y.,	500 00
“ Wm. P. Upham, Newtonville,	50 00
“ a friend,	50 00
“ a friend,	50 00
“ Geo. R. Harris,	100 00
“ Geo. O. Harris,	20 00
“ Nathan R. Morse,	10 00
“ Alden P. White, Danvers,	10 00
“ Geo. A. Perkins,	25 00
“ Chas. A. Buxton,	1 00
“ N. A. Horton,	50 00
“ Sarah L. Huntington,	20 00
“ Rev. Wm. Orne White, Brookline,	25 00
“ George R. Emmerton,	500 00
“ Frank Cousins,	25 00
“ Rev. Henry W. Foote, Boston,	50 00
“ a friend,	200 00
“ James A. Emmerton,	100 00
“ A. B. C.,	3 75
“ E. S. Morse,	50 00
“ Interest on Deposit,	78 00

From Jas. P. Cook,	250 00
“ Rev. DeWitt S. Clark,	25 00
“ Caleb Foote,	100 00
“ Chas. A. Ropes,	50 00
“ R. W. Ropes, Brooklyn, N. Y.,	50 00
“ Geo. P. Messervy,	100 00
“ George Peabody,	2,000 00
“ J. D. & J. W. Eaton,	100 00
“ A. C. Goodell, jr.,	500 00
“ C. H. & J. Price,	100 00
“ Jos. F. Dane,	100 00
“ David Coggin,	5 00
“ James B. Curwen,	250 00
“ A. H. Johnson,	25 00
“ Henry W. Peabody,	100 00
“ S. E. Peabody,	1,000 00
“ T. F. Hunt,	500 00
“ T. F. Hunt, chairman of the building committee,	500 00
“ friends of the Institute, bal- ance to make up the amount of the Plummer Hall fur- nishing bills,	1,353 16
	1,853 16
	<u>\$16,617 91</u>

May 21, 1888.

MEMBERS. Changes occur in the list of our associates by the addition of new names, and by the withdrawal of some by resignation, removal from the vicinity, or by death. Information has been received of the death of the following members during the year now drawing to a close.

Since the last annual meeting the names of two of the most distinguished members of the Institute have been taken from the roll.

SPENCER FULLERTON BAIRD, secretary of the Smithsonian Institution, director of the National Museum and chief officer of the U. S. Fish Commission, died at Wood's Holl, Mass., on Friday afternoon, Aug. 19, 1887. He was born in Reading, Pa., Feb. 3, 1823; a graduate of Dickinson College, Carlisle, Pa., in 1840, and in 1846 its professor of Natural History. In 1850 he was elected assistant secretary of the Smithsonian Institution, a position he held continuously until 1878 when, upon the death of Professor Henry, he was made secretary of the Institution. On the establishment of the U. S. Fish Commission in 1871 he was placed at its head. He was also the government commissioner of the Centennial Exhibition at Philadelphia in 1876. For many years Professor Baird had labored for the establishment of a great national museum in Washington, and he took advantage of the Centennial Exhibition to secure such an amount of material for the museum as to lead Congress to make an appropriation for a building for the museum and relieve the Smithsonian Institution from its support.

His large contributions to science brought him medals from foreign governments, and honorary memberships in various scientific societies. The connection of his name with thirty-three new genera and species of animals attests the high appreciation in which he was held by his fellow-workers in zoölogy, while his writings, embodying the results of his long labors, have given him high rank in scientific literature.

Professor Baird was chosen a corresponding member of the Institute, Nov. 30, 1859.

ASA GRAY, the distinguished botanist, died at Cambridge on the 30th of January 1888. He was the son of Moses and Roxana (Howard) Gray, born Nov. 18, 1810, at Sauquoit in the township of Paris, Oneida county, N. Y. The father was of Scotch-Irish, the mother of English descent. After leaving the school and the academy, he became a student in the Medical School at Fairfield and studied with physicians in the vicinity, receiving his degree of M.D. at the age of twenty-one. In 1833-4 he was an assistant of Dr. John Torrey, the professor of chemistry in the College of Physicians and Surgeons in New York city, and was soon associated with him in the elaboration of the flora of North America. He remained a few years in New York, as an assistant in the Medical College and as Curator of the Lyceum of Natural History. His early studies were in chemistry and mineralogy, and his first paper in the American Journal of Science and Art, written in connection with Dr. J. B. Crawe, was upon the mineralogy of portions of Jefferson and St. Lawrence counties. From this time, 1833, he was a regular contributor to the journal, and was soon one of its editors. The first edition of his text-book, "Elements of Botany," was printed in 1836.

In 1842, he was appointed the first incumbent of the professorship founded in Harvard University on a bequest of Dr. Joshua Fisher of Beverly, Mass. Dr. Gray continued in the active duties of this professorship until 1872, when he retired from the work of instruction and the care of the garden, that he might devote his time to his great work, "The Flora of North America," begun in 1838 in connection with Dr. Torrey. He had given to the college his extensive herbarium and valuable botanical library in the development of which he labored incessantly, and had the satisfaction of seeing them placed in a fire-

proof building erected for their reception. His position among the scientists of Europe is manifested by the courtesies and attentions extended to him during his last and sixth trip abroad. It is further shown in his having been elected an honorary member of the principal academies or societies in Europe, including the Royal Society of London and the Institute of France, and also in receiving the honor of doctorate from the universities of Oxford, Cambridge and Edinburgh.

He returned from his last European trip in October, in apparent good health and spirits with the hope of some years more of work. On the 27th of the following month, a paralytic stroke put an end to his labors. He lingered until the evening of the 30th of January when he quietly passed away.

Professor Gray was elected a corresponding member of the Essex Co. Natural History Society, Feb. 17, 1847, and was one of the earliest of the honorary members of the Institute.

The President called for remarks from Prof. F. W. Putnam as one who had been intimately associated with these honored members. Mr. Putnam in response said:—

MR. PRESIDENT:—Although this call is entirely unexpected and I am unprepared to give in detail the many events in the lives of the great men you have named, such as should be given in obituaries and doubtless will be given in many an extended memoir, yet I am sure there is not a student of science in our land who would not, at any moment, be able to say a few words to honor the memories of Professors Gray and Baird.

The death of these distinguished men is felt by us all

to be a great loss to the country. They have so long been leaders, each in his particular way, that it seems as if we were now left without a guide to direct us in systematic natural history. By me, personally, their deaths are deeply felt, for it has been my honor to count them as friends who guided me in youth and who, in recent years, at a time of great trial, in a matter they well understood, took a firm stand for justice and for what they believed to be right; and, as they acted in my case, so have they in many others.

Always true to the high principles of their lives, they have ever been ready to work for justice towards others. It is this nobleness and kindness in their characters that have made them so much loved by the hundreds of younger naturalists with whom they were brought into intimate relations. As would be expected of two such men, they were early brought together and continued through life in the closest ties, bound by mutual regard and deepest affection.

We all know of Professor Gray's gentle loving character; of his great work in systematic botany; of the immense influence he has exerted as a teacher of nature's laws as shown in the vegetable kingdom; of the volumes he has published and their far-reaching results; how his text-books and manuals have been the means of inducing thousands of young men and women to study nature and her laws; we know of the great herbarium he has founded, the Mecca of all American botanists; and of his masterly presentation of the great laws by which nature has spread flowers and trees over the land, and of the classical memoir on the "Botany of Japan." We know too of his position in the great discussion on evolution, and how clearly he presented the views of his friend Darwin, and

how he showed his own firm faith, true to his science and his God ; with courage in his convictions and caution in his speculations. Above all, we know the purity of the man whose principles all true naturalists will essay to follow.

Of Professor Baird, we all know of his youth passed in the fields of Pennsylvania, and of his early researches in the zoölogy of the state while professor of natural history in Dickinson College, about the time when Professor Gray took the chair of natural history at Harvard ; how he was selected by Professor Henry in 1848 to be the recipient of the first grant made by the Smithsonian Institution in aid of scientific exploration, that he might explore the bone-caves of Pennsylvania ; and how two years afterwards he was appointed assistant secretary of the Smithsonian Institution, in which position he did so much in directing systematic researches upon the zoölogy of America, and in organizing that great system of international exchange which has become one of the most important aids in the "diffusion of knowledge among men" in fulfilment of Smithson's bequest to the country. Years after, when the death of Professor Henry occurred, Professor Baird was the one man to take his place, and here he showed still more the great breadth of his mind and his loyal character. He was then called upon to administer trusts with which, during his life, he had had little in common, still no department of the great institution suffered, and all branches of science received from him equal attention ; although his love was ever for natural history in its broadest sense. We all know of his great administrative powers, of his influence over the large number of young naturalists who have gathered at Washington on the Government expeditions and surveys during the past thirty years, and the enormous col-

lections brought together there ; of his great systematic work upon the Birds and Mammals of North America, and of the volumes which contain the results of his researches. We know, too, when the labors of administration became so vast that he could no longer give his time to personal research, how he placed with generous hand the means he had accumulated at the disposal of others, and of the impetus he gave to the study of natural history by providing for workers not only the material for research, but salaried positions that they might continue their studies. He thus fostered research in the broadest manner, and brought up a set of workers in Washington, which has resulted in making it the great centre of science in our country, where to-day, nearly five hundred men are professionally engaged in scientific work in all departments, and many of these departments were actually created by the foresight and labors of this hard-working, self-sacrificing man. We know also of his founding the United States Fish Commission, and the truly wonderful results it has attained, not only in a scientific way, but in adding immense wealth to the country by furnishing food for the people, restoring fish to exhausted streams and portions of the coast, and introducing species that have become important in our supply of food on both sides of the continent. Had this one work of Professor Baird been his only and life-long effort, he would ever be remembered as a great benefactor, but while this work will ever stand out in prominence, from the great economic results achieved, it is only one of the many far-reaching results which we owe to him.

Surely, Mr. President, we have lost from our little roll of Honorary Members, two men, whose equals in their respective lines of research and influence we cannot hope to see in our time.

REV. EDWARD SUMNER ATWOOD, minister of the South church, Salem, died at the parsonage on Federal street on Sunday morning May 13, 1888. His death was very sudden and unexpected to the community, though his failing health for the past year indicated that his life would thus terminate.

Mr. Atwood was the son of George B. and Eliza (Sumner) Atwood and was born at Taunton, Mass., June 4, 1833, graduated at Brown University, 1852, at Andover Theological Seminary in 1856; in 1883 his alma mater conferred upon him the honorary degree of D.D.; ordained pastor of the church in Grantville, Wellesley Hills, Oct. 23, 1856, where he continued until 1864. On the 13th of October, 1864, he was installed over the South church as colleague pastor with the late Rev. Dr. Brown Emerson, succeeding in that capacity Rev. I. E. Dwinell now of Oakland, Cal. Since Dr. Emerson's death, July 25, 1872, he had been the sole pastor.

As a pulpit orator, Dr. Atwood had few equals: a terse, forcible and effective speaker. Gifted with a wonderful command of language, and keeping abreast with all the progressive knowledge of the day, he clothed his thoughts with striking beauty and wealth of felicitous illustrations, and was equally ready on all occasions. As a citizen, he was foremost in every good word and work and especially in the cause of education and advanced culture. As a member of the prudential committee of the A. B. C. F. M., he was very devoted, and wherever his services were needed he was ever ready, willing and energetic.

Soon after coming to this city he connected himself with several of our local scientific, literary and educational institutions. He was elected a member of the school board and half of the years of his residence here he contributed by his labors to its educational interests. In this work

he was prominent in the advocacy of the best education, the freest education based upon public duty and the public good.

He was also enrolled as a member of the Essex Institute, and from that time to the close of his life he manifested a deep interest in its prosperity; he believed in its objects, he recognized the good it had done and its powers for accomplishing greater good in the future, and to this end he gave freely of his time and versatile talents. The records of the Institute bear abundant testimony to the value of his membership. From time to time he favored the Institute with addresses and lectures. Among the interesting contributions on these occasions was a learned paper "On the beginnings and growth of language." It is noteworthy that his first address was upon the Bible. He profoundly believed in the Bible, had no fear of true science, believing that all truth was of God. He recognized no antagonism between true science and true religion. This was at a field meeting held in Essex on Wednesday, July 1, 1868, an old Genevan Bible having been exhibited at the afternoon session, by Hon. David Choate. When called upon by the chair, he took for his theme this old volume,* giving some interesting facts respecting the history of the different editions and spoke of the clear and exquisite printing which these books reveal, many of them not being surpassed by the best printing of the present day. This edition was printed at Geneva for the use of the English exiles who took refuge there.

Soon after the death of Prof. Louis Agassiz, Dr. Atwood paid a beautiful tribute to the character and achievements of that distinguished scientist at a meeting held on Monday, Dec. 15, 1873. He was a member of the com-

*See Proceed. Essex Institute, VOL. VI, p. 31.

mittee that presented the resolutions complimentary to Prof. A. Graham Bell on the occasion of the first public exhibition of that wonderful invention, the telephone,* at a lecture of the Institute course delivered Monday, Feb. 12, 1877. He was one of the most active members of the committee of arrangements for the celebration of the twenty-fifth anniversary of the Institute, Wednesday, March 5, 1873,† and on this occasion read a poem.

He was also an active and interested member of the committee on the commemoration by the Institute, Sept. 18, 1878, of the fifth half century of the landing of Governor Endicott in Salem,‡ and he prepared an eloquent address on this occasion.

For many years he was chairman of the publication committee of the Institute, a position of much responsibility and usefulness. One of the most important of Dr. Atwood's later services was the preparation of a noble tribute to the life and character of the late John Bertram.

Dr. Atwood will long be cherished in grateful memory by the members of the Essex Institute.

REV. JOSEPH BANVARD, D.D., a well known Baptist clergyman, died at Neponset on Wednesday, Sept. 28, 1887, in the seventy-eighth year of his age. He was born in the city of New York, May 9, 1810. His father, David Bonverd (the spelling of the name being changed to Banvard in the course of a business life), was the son of a Huguenot refugee who came from France about 1770 and settled in the city of New York; his mother was Elizabeth Mead, of Stamford, Conn. His health was delicate during his childhood and boyhood. He was a pupil at Joseph

* See Bulletin of Essex Institute, VOL. IX, pp. 21-31.

† See Bulletin of Essex Institute, VOL. V, p. 66.

‡ See Bulletin of Essex Institute, VOL. X, p. 151; also Hist. Collections of Essex Institute, VOL. XV, pp. 101-332.

Hoxie's school until he was fourteen years old, and was a diligent student, high in scholarship and prominent in declamation whenever the school had public exercises. Mr. Hoxie continued his interest in him after he left school, and was a firm friend through life. In 1825, he entered a wholesale drug store in New York city to learn the business; he remained four years, continuing his studies in the evenings.

Mr. Banvard was brought up strictly in the faith and practice of the Moravian church of which his parents were devoted members.

In the winter of 1826-7, he was in the habit of attending the services of the South Baptist church, Dr. Sommers pastor, on Sunday evenings. He enjoyed the preaching very much and in the spring of 1827 was confirmed and joined the United Brethren congregation.

Before he thought of devoting himself to the ministry, he made missionary trips to the village up the North River, by invitation preaching in school houses and dwellings. He entered South Reading Academy* July 6, 1830, thence to the Newton Theological School, graduating in 1835. He had more invitations to preach during his years of study than he could accept. His methodical habits enabled him to keep one day ahead in his lessons so that he was never hurried and he finished his course at Newton in better health than when he entered.

On the 26th of August, 1835, he was ordained pastor of the Second Baptist church in Salem, and began his minis-

*In 1829, the South Reading Academy was incorporated, and established under the auspices of the Baptist denomination, and was intended as an introductory school to the Theological Seminary at Newton, although open to all others. The school for several years was flourishing and maintained a high standard of instruction in English and classical learning. But at length the theological students were withheld and the corporation being without funds, it was judged best to discontinue the school.

terial life there. While there he wrote his Question Books for his own school and many of his other books for children and young people.

He remained in Salem about eleven years until March 7, 1846, when he resigned to accept the pastorate of the Harvard Street church in Boston, where he continued five years. He afterwards filled pastorates in West Cambridge, New York City, Pawtucket, R. I., Worcester, Mass., Paterson, N. J., and Neponset.

In 1866, he was chosen President of the National Theological Institute, District of Columbia, for the education of colored teachers and preachers, a position which he resigned when the work was assumed by the American Baptist Home Missionary Society.

Columbian college, Washington, conferred upon him the honorary degree of A.M. in 1845; Shurtleff college that of D.D. in 1861.

His love for his profession increased with years; its duties were pleasant, and he was ready for any call upon his time. He loved to preach, and said that he never had "a good Sabbath when he did not;" he regarded the visiting of his people and their personal friendships as essential to his usefulness. His pastoral visits were to him as important a part of his duties as preaching and he was as faithful in the performance of them.

His recreation from professional labor was the study of natural history. He had learned from his mother, when a boy, to "love all growing things" and he shared her love of flowers fully. He made a collection of the plants of Massachusetts, while he was living in Salem. His mother shared his enthusiasm and her interest added much to his pleasure in the work. He became a member of the Essex County Natural History Society, June 16, 1841.

In all his after-life, his Salem church held his most loving memories. He was frequently in the habit of spending several weeks of his summer vacations in Salem, and if any field meeting should be held during these visits, he usually attended and was always a welcome visitor.

JAMES NEEDHAM BUFFUM died at his residence, 12 Herbert street, Lynn, on Sunday, June 12, 1887. He was the son of Samuel and Hannah (Varney) Buffum and was born at North Berwick, Maine, May 16, 1807. At an early age he came to Salem where he worked three years at organ building with Messrs. Hook & Co., and then learned the trade of a house carpenter. Associated with his brother David, he continued steadily this occupation until 1827, when he suspended manual labor for a year, which time he spent at the Friends' school in Providence, R. I. Returning, he went to Lynn and for the next twenty years was employed in building houses and stores in that rapidly growing town, and afterwards in the manufacture of packing boxes and shoe cases until the time of his decease.

Mr. Buffum was interested in many public enterprises, important to Lynn and its neighborhood. In 1868, he was chosen presidential elector; in 1869, mayor of the city of Lynn; in 1872, re-elected to the same office; and in 1873, representative to Massachusetts legislature.

The antislavery cause, early enlisted his sympathy and active coöperation. He made the acquaintance of William Lloyd Garrison in 1836, whose lifelong friendship and esteem he retained. The Liberator dates its existence from that year and Mr. Buffum was a subscriber and constant reader during its continuance of thirty years. He was a foremost leader in this movement, and was also an advocate of woman suffrage and temperance reform. On account of its

proslavery attitude, he left the Friends' society, and established the Free church in Lynn, which had for its preacher, Samuel Johnson.*

Mr. Buffum was gifted physically and mentally. His nature was genial, his temper rarely ruffled, his sense of humor keen, and he had a ready wit. The deceased philanthropist was admired and respected and his memory will be kept green. Admitted to membership, Aug. 13, 1862.

SAMUEL BARTLETT BUTTRICK died at the residence of his son-in-law John S. Ives, on Clifton avenue, Salem, Friday, Nov. 11, 1887, in the 87th year of his age, after an illness of several weeks. He was the oldest son of Willard and Mary (Bartlett) Buttrick and was born in Gorham, Me., Oct. 16, 1801; came to Salem in 1823; married Jan. 26, 1833, Anne daughter of David Merritt of Salem; descended, from William Buttrick, one of the pioneers and first settlers of Concord, Mass. (through Samuel², Jonathan³, Jonathan⁴, Willard⁵, Willard⁶), who came to New England in 1634 at the age of 18 years, married Sarah Bateman in 1646 and died June 30, 1698.

By profession an accountant, an officer in the Village or First National Bank in Danvers, in the Commercial or First National Bank, Salem, in the Harmony Grove cemetery corporation, etc., etc. He was an active member of the First (Unitarian) church in Salem, elected a deacon Mar. 29, 1857, a position that he held to the close of his life.

He became a member of the Essex Lodge of F. A. M. Feb. 5, 1828, took many of the degrees and filled several

*Rev. Samuel Johnson was the son of Dr. Samuel and Anna (Dodge) Johnson; was born in Salem, Oct. 10, 1822; a graduate of Harvard College in 1842; died at North Andover, Feb. 19, 1882. He was well known for his literary and philosophical writings, especially as the author of a series of works on Oriental Religions, two of which were printed and the third was ready for the press at the time of his decease and has since been issued under the editorship of Rev. A. M. Haskell.

positions of honor and trust and was ever after deeply interested in the masonic brotherhood. He was initiated into the Essex Lodge of I. O. O. F. Dec. 4, 1843, and when Fraternity Lodge was instituted in Nov., 1846, he became one of the charter members, and was a trustee for more than twenty years. In all respects he was an upright man and good citizen, discreet and even-tempered. He had the confidence and esteem of all who knew him or had business relations with him.

He had a great fondness for the study of natural history, especially the flora, devoting much of his leisure to this pursuit. He was elected a member of the Essex Institute Mar. 12, 1856, frequently attended its field meetings, collecting many plants during the forenoon rambles placing them on the table at the afternoon session, frequently a list of his findings accompanying the same. Some of these have been printed in the earlier volumes of the Proceedings or Bulletin of the Institute. Advancing years did not diminish his zeal in this study, but he was ever on the alert to find some more plants on the first appearance of the opening of the spring flowers and to record these facts in his floral calendar.

REV. ARIEL PARISH CHUTE died at Sharon, Mass., Dec. 18, 1887. He was born in Byfield, Mass., May 16, 1809, the home of his ancestors for a century and a half, and fitted for college at Dummer Academy located in the same parish; graduated at Bowdoin College in 1832, the Theological School at Andover in 1835, ordained over the Congregational church in Oxford, Me., the following year; afterward he held a pastorate in Pownal, Me., Ware, Mass., and supplied the pulpit in Lynnfield about six years. In the intervals between these duties he was principal of the Warren Academy in Woburn, the academy at Milton,

Mass., and the Dummer Academy in his native parish. Since 1861, he has been in the service of the government, an officer in the Boston Custom House and in the United States Treasury, Boston, retiring with the reputation of a skilful and valuable officer. In consequence of advancing age and failing health, the last few years of his life were spent at his home in Sharon.

During his pastorate at Lynnfield he associated himself with the Essex Institute and became deeply interested in its work, and several field meetings were held in his little chapel under his auspices. On these occasions he took an active part, his familiarity with the surrounding objects, the varied scenery, the peculiar geological features, the fauna and the flora, enabling him to impart freely much valuable information and instruction on these and kindred subjects, thus adding much to the usefulness of these gatherings.

HON. EDWARD SWAIN DAVIS, eighth mayor of Lynn and one of the oldest and most respected citizens, died on Sunday, August 7, 1887, at his home on Summer Street, Lynn. He was the son of Hugh and Elizabeth (Batcheller) Davis and was born in Lynn, June 22, 1808, educated in the schools of Lynn and graduated from the old Lynn Academy in 1826. His first position was a clerkship in Lynn Mechanics' Bank where he remained until his majority; then in business in Philadelphia, returning home in 1833 to enter the service of the Nahant Bank. With a short intermission he continued in this situation until the winding up of its affairs.

On account of ill health, he retired for several years from active business pursuits. Upon recovery he obtained a position in a United States bonded warehouse in Boston. In 1861 he was a clerk in the state auditor's office continu-

ing for many years, filling the second, and then the first clerk's position.

He took a great interest in the old militia. In 1835, was major of regiment of light infantry, first brigade, Essex County, promoted lieutenant colonel, commanding the regiment for a good portion of the time until 1843.

He took an active part in several of the local societies that were formed some fifty years since : viz., to secure the abolition of slavery in the United States, the improvement of the character and condition of the free blacks, the acquisition by Indians and blacks of their natural rights, etc. He early espoused the cause of universal freedom, and lived to see it accomplished. The Young Men's Temperance Reform Society in 1835 likewise claimed his sympathy and coöperation. He was mayor of the city in 1859 and 1860 ; also president of the council, 1852, 1853, 1856, 1857 and member of the School Board six years ; representative Massachusetts legislature, 1839.

Mr. Davis was a deep thinker and well-read man, devotedly fond of books and possessed one of the largest and most valuable private libraries in Lynn. His society was frequently sought by students and men of culture.

During his mayoralty he took a deep interest in the public library of Lynn. He became a member of the Essex County Natural History Society in 1834.

WILLIAM PUTNAM ENDICOTT, the father of Hon. William C. Endicott, U. S. Secretary of War under the administration of President Cleveland, died at his residence, on Essex Street, Salem, Sunday, March 11, 1888, in his 86th year. He was the son of Samuel and Elizabeth (Putnam) Endicott, and was born in Salem, March 5, 1803, lived during the latter part of his life, and died in the house

formerly occupied and owned by his father. He was a graduate of Harvard in the class of 1822. He was admitted a member of the Essex Lodge of Freemasons, May 4, 1824. He was accustomed to pass his summers at his country seat in Milford, N. H., and generally lived a quiet and retired life of gentlemanly leisure. In his early days he was connected with the militia and attained the rank of major. He also made several voyages to the East Indies as supercargo and was afterwards a merchant. He was admitted a member of the Salem East India Marine Society in April, 1835. In 1844, he was one of the representatives from Salem to the Massachusetts Legislature. A lineal descendant of John Endecott, the first governor of the Massachusetts Bay Colony in the eighth generation, through Zerobabel², Samuel³, Samuel⁴, John⁵, John⁶, Samuel⁷. He was an original member of the Institute.

FRANCIS GOSS died at his mother's house, in Salem, of diphtheria, Jan. 26, 1888. He was the son of Francis P. and Sylvia E. (Wright) Goss, born at Salem, Dec. 14, 1838; graduated from the Salem English High School, Jan. 28, 1857. The father and son for many years conducted the plumbing business on St. Peter's street, Salem. The latter was a member of Ethan Allen Council of American Mechanics. Admitted to membership, July 15, 1863.

JOSEPH LEONARD HAMMOND, son of Joseph and Mary C. (Hammond) Hammond, born in Salem, Sept. 15, 1838, graduated a member of the twenty-fifth class in the Salem English High School. For many years he resided in China connected with the Custom's Service and in 1876 came home as a member of the Board of Commissioners, having in charge the Chinese exhibit at the Centennial Exposition in Philadelphia. Remaining in this country about a year, he returned to China and engaged in business with

Messrs. Morris & Co., merchants at Shanghai, where he died on the nineteenth of October, 1886, leaving a wife and three children residing in Salem. Admitted to membership in the Institute Aug. 9, 1865.

JOSEPH BASSETT HOLDER, curator of the American Museum of Natural History in New York, N. Y., died in that city on Tuesday, Feb. 28, 1888. He was the son of Aaron L. and Rachel (Bassett) Holder, and was born in Lynn, Mass., Oct. 26, 1824. He was descended on the mother's side from the Bassetts, a well-known family in Lynn, from the early settlements. The Holders were also among the early Friends or Quakers. The immediate ancestor was Christopher Holder who came from Alverton, Co. of Gloucester, England, arriving in Boston, July 27, 1656. The different branches settled in and about Boston. In 1700, one of his ancestors built a house on the corner of Nahant and Sagamore streets, which has been owned and occupied by several generations of this family.

He was educated in the Harvard Medical School, and in 1846 began the practice of medicine in Swampscott, Mass., and later removed to Lynn and became the city physician. From his youth he was an ardent lover of nature, and devoted much time to its study and research, and took much pleasure in encouraging a like taste among the people. He was an ardent botanist and prepared a list of the plants of Essex county and left copious notes of their habits, times of appearance and kept what might be called a diary of plant life. He also made a catalogue of the birds of Lynn and vicinity, which appeared as Bulletin No. 1, of the Publications of the Lynn Natural History Society. This led to his meeting Professor Baird and the formation of a lifelong acquaintance. He early met Professor Agassiz and visited him at his house in Na-

hant, and for some years made many investigations dredging and collecting, particularly with his friend Prof. William Stimpson.

In 1859 he accepted an appointment of surgeon in the U. S. Engineer department at Tortugas ; this gave him an opportunity to enter more fully into his favorite studies. Arriving at Fort Jefferson he began experimental studies and collected hundreds of new and hitherto undescribed species in almost every branch of the animal (marine) kingdom. These were sent to the Smithsonian Institution, Harvard and other colleges.

On the breaking out of the war, Dr. Holder became assistant surgeon in the regular army. He was also health officer of the port. In 1868 he was ordered to Fortress Monroe, Va. In 1870 he resigned to join Prof. A. S. Bickmore in the establishment of the Museum of Natural History, Central Park, New York ; and for years that gentleman and himself carried on this great work, and cared for the collections, almost unassisted. During the past few years, he was curator of the department of invertebrate zoölogy.

Dr. Holder was a prolific writer, and while he contributed to many scientific publications, he was always impressed with the value of creating an interest in nature among the masses, as exerting a refining and cultivating influence, and many of his writings tended in this direction. Admitted to membership, Sept. 9, 1846.

JOHN CLOUGH HOLMES died at his office in Detroit, Mich., on Friday, Dec. 16, 1887, of apoplexy. Professor Holmes was born at Salem, Mass., Sept. 26, 1809. He was the son of Capt. Thomas and Anna (Cross) Holmes. He came to Detroit when a young man and found employment in the dry goods store of John Palmer & Son. He was advanced to a partnership interest and continued in

the business with considerable success for many years and finally retired with a handsome competency ; afterwards he very largely devoted his time to the pursuit of educational and scientific studies and especially found much pleasure in the study of horticulture and pomology, and as early as 1852 established the *Farmers' Companion and Horticultural Gazette*. It was merged with another publication and he resigned its control. In 1848, he served as a member of the board of education and is still remembered as an advocate of reform methods in the local schools. He was instrumental in the organization of the State Pioneer Society and was the editor of a collection of papers which are among the most valuable. As a compiler and writer of matter relating to the early and contemporary history of the State he has undoubtedly accomplished more than any other man. He has been thus engaged for many years.

Professor Holmes with others took the initiatory steps toward establishing the state agricultural college and after its organization became a member of the faculty. In 1874 he took part in the formation of the Detroit Scientific Association and held various official positions in connection therewith until it dissolved and turned its valuable collection of curiosities over to the Detroit Public Library. He took an active part in the work of the Wayne Co. Pioneer Society and was the president in 1882. He married Miss Jane Palmer a daughter of his business partner, who died March 8, 1884, leaving no children.

During the later years of his life, he was a frequent visitor to Salem and took great pleasure in meeting with old friends and recalling the memories of the past. He was elected a corresponding member, Feb. 14, 1849.

AUSTIN DANIEL KILHAM, one of the best known and highly esteemed citizens of Beverly, died of paralysis, Oct.

25, 1887. He was a son of Abraham and Louisa (Bridge) Kilham and was born at Beverly, July 25, 1817. For many years, the deceased had been identified with the financial interests of the town, being at the time of his death Vice President and one of the Directors of the Beverly National Bank, also a Vice President of the Beverly Savings Bank.¹ He was one of Beverly's sturdy citizens and always took an interest in the welfare of the town and its prosperity. Admitted to membership Feb. 20, 1882.

JOSE MARGATI, a well known and highly esteemed citizen of Salem, died suddenly June 20, 1887. He was the son of Lorenzo and Dolores (Raca) Margati and was born in Manilla, Philippine Islands, Jan. 28, 1832. He came to Salem when a boy to obtain his education. His father, a wealthy Spaniard, died some years ago, leaving him a considerable share of his fortune. He made Salem his home; became a fine linguist and developed a strong passion for music. He was president of the Salem Oratorio Society and was also interested in the Salem Symphony Club. He showed ability as a musical composer and his compositions were always possessed of true merit. A few years ago he published in the Salem Observer a series of articles on oratorio music which evinced careful study and extensive research and won for the author high commendation from musical critics.

Mr. Margati was a man of strong character and fixed principles. For many years he was bookkeeper and confidential clerk in one of the large mercantile establishments in Boston. He married Sarah B., daughter of Capt. Oliver Thayer of Salem, who survives him, together with

¹ He was educated at Phillips Exeter Academy and passed the active period of his life as a successful merchant, doing business in Boston and residing in Beverly.

two daughters. He had many friends and was held in high esteem in the social circles of Salem. Admitted to membership, May 25, 1874.

JAMES R. NICHOLS died at his home, on Summer street, Haverhill, Monday, Jan. 2, 1888. He was the son of Stephen and Ruth Nichols and was born at Merrimac, Mass., July 20, 1819, and went to Haverhill in early life and filled a position in Dr. M. Nichols' drug store. At the age of twenty-one he commenced the study of medicine with Dr. Kimball Flint; attended medical lectures at Dartmouth College. He opened a drug store in Haverhill in 1843, continuing until 1856, when he removed to Boston and established a wholesale drug and chemical store. He returned to Haverhill in 1872. He visited Europe in 1855 and again in 1867. He founded in 1868 the "Journal of Chemistry" and was its editor for many years and afterwards the senior editor of the popular "Science News." He found time during his business career to write books and give attention to inventions and discovery, lecturing frequently upon science and agriculture and serving in various public and private capacities; a pioneer in chemical discoveries in which he has acquired great wealth; the author of several volumes, the last of which entitled "Whence, What, Where," has had a great sale and has passed through several editions. Since relinquishing his business in Boston he has devoted himself to railroad management, a director in the Boston and Maine from 1873 to his decease. In 1867, he was appointed by Mr. Peabody a trustee of the Peabody Academy of Science located in Salem. Admitted to membership, Dec. 9, 1857.

COL. SAMUEL COOK OLIVER, eldest son of the late Gen. Henry Kemble and Sarah (Cook) Oliver, died at Salem, Sunday, March 25, 1888, a graduate of the Salem Latin

School from which he entered Harvard College in 1845. He remained there about two and a half years and then entered upon a business life with his father in Lawrence, Mass., who was at that time agent of the Atlantic Mills in that city; always interested in the military he associated himself with the Salem Light Infantry, New England Guards and for several years the Boston Independent Corps of Cadets; at the outbreak of the war he was commissioned Lieut. Col. of the 14th Reg. Mass. Vols., Col. Wm. B. Greene commanding, July 5, 1861. The Regiment was subsequently augmented by the addition of two companies and became the First Mass. Heavy Artillery which was stationed at Fort Albany, Washington. He resigned his commission March 13, 1862, and returned to Massachusetts. He then obtained a new commission and assisted in recruiting Co. F. 35th Reg. Mass. Vol., of which he was commissioned captain Aug. 12, 1862. He participated with this regiment in the battles of South Mountain and of Antietam where he received a severe and permanent injury from the concussion from the bursting of a shell. His lower limbs were partially paralyzed; he however recovered for a time, returned to the regiment and served with it until Aug. 27, 1863, when he was promoted to be major and was transferred to the 2nd Mass. H. A., and served with this regiment to the close of the war, being restored to his old rank of Lieut. Col., Sept. 18, 1865, mustered out 3d Sept., 1865, Brevetted Colonel 22 May, 1866. Since the war the paralysis returned with his advancing years making locomotion painful and difficult without the aid of canes. Admitted to membership Jan. 17, 1876.

WARREN ORDWAY, a wealthy retired shoe manufacturer of Bradford, Mass., died on Thursday, May 26, 1887; a son of David and Mary (Emery) Ordway, born at West

Newbury, May 17, 1810. A lineal descendant of *James*¹ *Ordway* of Dover, born, it is said, in Wales, 1620; removed to Newbury; married 23 Nov., 1648, Ann Emery who died Mar. 31, 1687. He died after 1702.

*Hananial*² *Ordway*, b. Dec. 2, 1665; married Abigail Merrill; d. June, 1758; was one of the first settlers in the westerly part of Newbury near Indian Hill.

*Nathaniel*³ *Ordway*, b. July 3, 1695; d. Dec. 30, 1765; m. Aug. 14, 1718, Priscilla Mors, b. Apr. 22, 1697; d. May 29, 1735.

*David*⁴ *Ordway*, b. Sept. 16, 1745; d. Sept. 26, 1826; m. Apr. 16, 1767, Lois Patten who was b. Nov. 11, 1742, and d. June 2, 1818.

*David*⁵ *Ordway*, b. Sept. 19, 1778; d. 1848; m. Aug. 9, 1802, Mary Emery who was b. 1783, d. Oct. 21, 1819, the parents of the subject of this notice.

Mr. Ordway in early life was engaged in the comb and harness making business. Removing to Bradford in 1834, he began manufacturing shoes, continuing this occupation till 1876 when he retired. He was one of the first in the shoe trade to introduce the system of cash payments for work, which at once became popular with the manufacturers. He was a member of the State Legislature in 1860. He was a leading member of the Congregational church, and was widely known. He was a prominent citizen of Bradford where he held offices of trust from time to time. When the Bradford Farmers' club was organized he was the first president and one of its most active supporters.

JOHN CHRISTOPHER OSGOOD died in Salem, Wednesday, Oct. 12, 1887. He was the son of John Babbidge and Hannah M. (Osgood) Osgood, born in Salem, March 22, 1826, and educated in its schools; entered in mercantile business as a clerk, with the firm of Robert Upton &

Co. of Salem who were engaged in the African and South American trades. He rose in position to be a partner in the house and continued in the business up to 1860. He was interested in the whaling business and associated with others in fitting out from this port barques Wm. H. Shailers and Said Bin Sultan. He was also engaged in several other enterprises of a like character. He was a director of Asiatic National Bank and a trustee of Salem Five Cents Savings Bank; for ten years superintendent of the South Church Sunday School; held official positions with the various organizations connected therewith and also with several of the charitable institutions of the city: Children's Friend Society, Old Men's Home, Home for Aged Women, Salem Hospital, etc. He also served several years in both branches of the city government and on the school committee. A man of character and pronounced convictions and would never sacrifice his convictions to expediency. Admitted to membership Oct. 5, 1853.

JONATHAN PERLEY, a well-known citizen, died on Sunday, April 29, 1888, at his residence in Salem. He was the son of Jonathan and Sally (Smith) Perley, and was born in Salem, April 30, 1809. He was one of the oldest bookbinders in this city and vicinity, learned his trade of Stephen B. Ives, Sr., and after leaving Mr. Ives was associated with John P. Jewett & Co., who were subsequently extensive book-publishers in Boston. He established, later on, a large and successful business for himself which has been continued by his son, the only survivor of his children. He was greatly interested in the different orders of masonry and odd fellowship and filled many offices of trust and honor under these organizations; also local politics claimed a share of his attention and he filled for several years a seat in the city council.

He took an active interest in the native American movement in 1855, and when the office of register of probate was made elective about that time, he was the first incumbent chosen therein, but retained the position only about three months resigning on account of the inadequacy of the salary.

For years Mr. Perley was clerk of the old Active Fire Club, a famous organization for nearly eighty years in Salem, succeeding his father in the office. His long life had been one of quiet and persistent industry, of the purest moral character, deserving of respect and esteem with which he was universally regarded. Admitted to membership, Aug. 2, 1848.

JOHN PICKETT, a highly respected citizen of Beverly, died on Saturday, Dec. 3, 1887, from apoplexy. He was son of Thomas and Annis (Preston) Pickett and was born at Beverly, Nov. 9, 1807. In early life he was a sailmaker having commenced in that industry at the age of thirteen years. Subsequently the firm of R. and J. Pickett was formed and continued for many years until the death of the senior partner when Mr. John Pickett succeeded to the business. The firm during the later years became interested in the coal and wood business. He also interested himself in the fishing business and at one time owned several vessels making regular trips between Beverly and the Grand Banks and the Georges. He was President of the Beverly National Bank and Vice President of the Beverly Savings Bank. He has always been prominent in the town affairs, having held several positions of trust. He was one of the Selectmen at the time of the late civil war and made trips to the front to look after the needs of the Beverly boys in the field. For two years he represented the town in the Massachusetts Legislature. He

was a man of a large and generous heart, warm in his impulses but of quiet and unostentatious benevolence. He enjoyed to an eminent degree the confidence and esteem of all with whom he had business or social relations. Admitted to membership, Feb. 4, 1867.

BENJAMIN C. PUTNAM, a well-known resident of Danvers, died at his home in that town on Monday, Feb. 20, 1888. He was born in Plaistow, N. H., Feb. 6, 1820, whither his father had moved from Danvers, having formerly owned the farm on North Street now in the possession of Stephen Day. He was a son of Benjamin and Nancy (Peaslee) Putnam and descended from John¹ Putnam (through Nathaniel,² born 1621, died Feb. 23, 1700; a Repres. Mass. Legis., 1690, 1691; Benjamin,³ Benjamin,⁴ Benjamin,⁵ Benjamin,⁶ Benjamin⁷, the father of the subject of this sketch) who came from Buckinghamshire in England and settled in Salem, Mass., 1634; had grant of land in Salem village, now Danvers in 1640; admitted a free-man, 1647, and died 1663.

When about the age of seventeen he came to Danvers and was in the grocery business with A. P. Perley & Co., for several years. He then engaged in that business in Wenham, Mass., for twenty-five years. During his residence in that town he represented it in the Legislature in 1853 and the district (including Wenham and Beverly) in 1862, and was the town clerk from March, 1857, to March, 1862. In 1860 he bought a farm in Tunbridge, Vt., which he sold in 1864 and then went to Boston and engaged in the hat and fur business as one of the firm of Osgood, Putnam & Wing; he afterwards engaged in an extensive real estate business, residing in Chelsea, Mass. In June, 1886, he bought the estate of H. C. Nye of Danvers and moved thereon, disposing of his property in Bos-

ton. In early life he exhibited not only much native tact and energy but versatility, also some literary and dramatic talent and gave occasional racy contributions to the press. Fond of reading and an independent thinker, his mother wit, restless activity and public spirit made him a leader in every community in which he lived. He held several responsible offices both in Massachusetts and Vermont, but in every case the office sought him, not the man the office. He was an active and energetic man and honorable in all his dealings. He was admitted to membership, Aug. 4, 1857.

EDWARD R. SECCOMB died suddenly from disease of the heart, at his residence in West Newton on Monday, Aug. 15, 1887. He was the son of Eben and Mary (Marston) Seccomb and was born in Salem, Mass., May 14, 1816. He was descended from *Richard*¹ Seccomb, born in Cornwall, England, in 1645, arrived in Boston, Oct., 1680, finally settled in Lynn, where he died in 1694; through *John*² who married Mehitable Simmons of Boston; *Simmons*,³ born in Boston, May 17, 1711, married Elizabeth Rand, died in Derryfield, N. H., 1740; *Joseph*,⁴ born in Derryfield, N. H., Dec. 7, 1736, married Ruth Brooks of Medford, resided in Danvers and Salem, died Nov., 1810; Eben, born June 19, 1778, merchant in Salem, married, 2nd, Mary Marston of Salem died June 24, 1835; and they were the parents of the subject of this sketch. Mr. Seccomb commenced his business life as a flour and grain merchant in company with his brother Eben, at the head of Central wharf, Salem. Some years later he was interested in an oil and candle factory in South Salem, for many years engaged in the African trade at the head of the Boston house of Seccomb and Taylor. He had resided in Brookline, Mass., and during his residence

there was a member of the board of selectmen of that town. Before moving to Newton some twenty years since, he had resided in Brooklyn, New York. He was a prominent member of the Baptist church at West Newton, was a member of the city council for several years, and always took a lively interest in local affairs. He was very benevolent, giving largely and freely of his means for every worthy object and he will long be remembered as one of the leading public-spirited citizens of that city.

He was admitted to membership in the Essex County Natural History Society, June 9, 1836.

DANIEL VARNEY, a worthy and esteemed citizen of Salem, son of Solomon and Esther (Buxton) Varney, born in Salem, July 23, 1810, and educated in its schools, died in that city Dec. 18, 1887. The Varney tannery of to-day is one of the oldest in the city. He was apprenticed, early, to the business and for several years a member of the well remembered firm of W. D. & S. Varney, his associates being his brothers William and Solomon, both of whom are deceased. He was the last of his generation.

He was also associated with the firm of Varney, Haskell & Co., at one time doing a large business in hides and leather, on High street in Boston. He was a very successful business man and retired with a competency, being succeeded by his nephews Henry and George W. Varney. Brought up as a Quaker, and bearing with him through life something of the quiet dignity and frank directness of manner which characterize that sect, he was subsequently for many years a prominent member and supporter of the Universalist church in Salem. He has served upon the school committee and was at one time a member of the old fire department.

He was admitted to membership, October 21, 1872.

RICHARD PALMER WATERS, the youngest child of Robert and Lydia (Gellison) Waters, was born at Salem, September 29, 1807. He died at Cherry Hill, North Beverly, May 19, 1887. He was never married. His fourscore years were marked by more than the ordinary vicissitudes likely to attend the lives of men of distinct originality and force of character like himself.

He was fortunate in his birth. His parents were eminently worthy persons of limited means but of the sturdy old colonial type which gave so strong a local coloring to life in Salem at the time. He derived his given names, and probably some strain of blood, from the old pioneer ship-builder of Knocker's Hole, Richard Palmer, who had grants among the first of those that wrought so lustily in the noisy ship-yards about Creek Street, and the family possessions have been kept in memory there until recently by a substantial old homestead on High Street Court,¹ known as the Palmer House, but now demolished. He lost his father young.

From early boyhood he found himself thrown upon his own resources, and throughout the battle of life he asked no odds of any body. Such an education as he had after leaving the Hacker school he picked up in a desultory way, in the counting-rooms of Salem, and in this he saw no mean opportunity, but made the most of it, pushing on with such sagacity and courage that his twenty-fifth year found him master of a little shop kept in the building which stood on Essex near Cambridge street west of the old Carnes House. This was a section of the town where much retail trade centred in the days before the railroad when the traffic of northern and eastern New England found its way through Salem to Boston over Essex Bridge

¹ Formerly called Roast Meat Hill.

and the Salem Turnpike.¹ The same year, 1832, was marked in his history by the founding of the first society of Garrisonian abolitionists in Boston, and also of Crombie Street Church in Salem, a broad and vigorous movement which enlisted the interest of Rufus Choate amongst its incorporators, and had from the outset the enthusiastic devotion of Mr. Waters, though his antislavery proclivities seem afterwards to have led him to Howard Street.² Indeed nothing which seemed to him to involve the broader interests of mankind ever failed to touch him. He was from the first a pronounced supporter of the reformatory movements of the day, such as temperance, the abolition of slavery and the like, and he never suffered the condition of his purse nor considerations of personal preferment or gain to stand in his way. He used to tell with rare pleasure in later years, when his liberality in contributing to every undertaking which met his approval, be it social, political, denominational or charitable, had become well known, of the day of small things when he walked to Boston to attend an antislavery meeting because he could ill afford to ride, and of the eager delight with which he saw an aged Quaker add a thousand dollars to the contribution for the sacred cause, the footsore young enthusiast had been commissioned to collect. In later life Mr. Waters bore a manly part in the struggle for freedom in Kansas, in conjunction with Amos A. Lawrence and his honored associates, and was chosen, during the continuance of it in the autumn of 1855, to a seat in the Legislature, the only elective public office he ever held. A special feature of his benevolence was the interest he never ceased to feel in the business suc-

¹ On Essex street west of North street corner, there were at least thirty-four mechanics' and retailers' shops, before reaching Beckford street, and between that and Buffum's corner a dozen more.

² See Rev. E. B. Willson's *Ecclesiastical History of Salem*, in *Hurd's History of Essex Co.* (Lewis & Co.) Vol. 1, pp. 52-4, 59-60.

cess of industrious young men. He knew of old what struggles and sacrifices business success costs and, since he had no family dependent on his means, felt himself at liberty to indulge in the luxurious bounty of helping on his juniors with well-considered loans of capital and credit.

The keen commercial instincts of John Bertram and Michael Shepard seem to have made them the first to discover in Mr. Waters the promise of a career, at a time when they with Capt. Wm. B. Smith of the Brig "Cherokee," and others, were enlisted in the undertaking to develop trade and build up an extensive business at Zanzibar.¹ With warm encouragement from them and the cordial endorsement of Ex-Senator Silsbee, Mr. Waters visited the National Capital in February, 1836, and was there presented in person, by our representative, Stephen C. Phillips, to the President of the United States. He returned in March with a commission signed by General Jackson,—the first commission ever issued to an American or any other Consul at Zanzibar. He could hardly have succeeded in securing this but for a fortunate coincidence. He was already known as a pronounced, outspoken and unconditional abolitionist, and on that ground was of course much disparaged amongst influential people. Certainly this was not the sort of reputation likely to commend him to the favorable notice of General Jackson's second administration, but it was his fortune to have for an intimate friend the Rev. James Trask Woodbury of Acton, a man of marked energy of character and mind, a thorough-going abolitionist like himself, and a brother of Levi Woodbury, at that time Secretary of the Treasury.²

¹ Salem ships, belonging to the Rogers Brothers and other owners, had been touching and trading at Zanzibar since the opening years of the century.

²April 1, 1836, he passed the day at the Topsfield Stage House with the County Committee of the Essex County Anti Slavery Society of which he was a member;

Mr. Waters sailed from Salem for Zanzibar, Oct. 29, 1836, in the Brig "Generous," Capt. Benjamin Conant, Master, and sighted the Island, March 17, 1837, dropping anchor before the populous city of his destination the next morning. He was the bearer, amongst other papers, of a letter of thanks from the President to the Sultan for aid rendered our famous Sloop of War "Peacock," while aground near Muscat. His welcome was a marked one. He was received with a national salute from the Brig "Leander," Capt. James S. Kimball, belonging to Capt. Joseph Peabody of Salem, in addition to the official salute of the Sultan's Frigate "Shahalum," to both of which the "Generous" replied. Two days later he was received by Captain Hassen, a resident Private Secretary, who had entertained him at dinner and arranged all needful formalities, and by him presented to His Highness Syed Sied Bin, Sultan of Muscat and its Dependencies. His Highness placed him in his own seat, warmly reciprocating his expressions in favor of commercial intercourse, and tendering him his choice of houses in the city, rent-free, and the use of long boats from his Sloop-of-War. Mr. Waters presented his credentials and President Jackson's letter, and retired after an hour's talk, much pleased with the interview. The mutual understanding then established was unimpaired throughout his official residence at Zanzibar, and indeed survived his return to his own country. In

present, besides Mr. Waters, Rev. Gardner B. Perry, Rev. Cyrus P. Grosvenor, Deacon Dodge, Thomas Spencer and William Oakes. Mr. Garrison had been mobbed in Boston the year before. New Year's day, 1837, which was Sunday, he passed on ship board off the Cape of Good Hope, and his journal for that day recites with pious enthusiasm the liberation from Salem jail, just a year before, of Rev. George B. Cheever with whom he had then associated himself as his "beloved pastor,"—in whose martyrdom he rejoiced,—and whose two stirring sermons on the event he heard amidst the excited concourse which crowded the aisles and entrances of the Howard Street Church.

For Rev. J. T. Woodbury, see Palmer's Necrology of Harvard College, pp. 366-8. For Hon. Levi Woodbury, see Hist. Coll. Essex Inst., Vol. xxiv, p. 4.

the Sultan he met a potentate rarely endowed with generous and royal attributes, a thorough Arab gentleman, wearing his honors with that native grace and easy dignity begotten of habits of authority and the instinct for command. Their relations afterwards became very close,—so much so that the Sultan received with genuine emotion, in August, the Consul's condolences on the death of a favorite child, and often made occasions to discuss in the manliest and most ingenuous spirit the relative claims to reverence of the crescent and the cross.

He had succeeded before the end of March in securing, with Capt. Hassen's aid, a house for his consulate,—for several years the only foreign consulate at Zanzibar,—and had his flag flying on Sunday, April 16, and ten days later was able to give an official reception there to His Highness, the Sultan, who paid him an unannounced visit, accompanied by the young prince Syed Harled, his son, yet in his teens, twenty or thirty grandees and as many soldiers. From this time on His Majesty's attentions were unfailing. Presents of preserved and fresh fruits,—pots of ginger and bottles of sherbet,—testified to his friendly regard, when periods of illness confined Mr. Waters within doors, and on June 11 the Consul declined the Sultan's invitation to ride with him to his pleasure grounds in the country, for the reason that the day fixed was Sunday. The courtesy was declined a second time next month for the same reason, and afterwards the invitation was extended and accepted for another day, His Highness remarking that amongst all the English and American Christians he had known before, only one kept the sabbath strictly. In the matter of religious scruple the Christians might have taken a lesson from the Moslem officers of the household. On the day of his arrival, receiving a call of welcome from a party of these,—the captains of two Men-of-War among

the number,—Mr. Waters offered wine which was declined on the ground that it was forbidden by the Koran.

On the outward voyage, Mr. Waters had touched at Majaunga Bay, where he had business with the Governor, passing there in the twilight of January 25 within speaking distance, as he entered, the bark "Eliza" of and for Salem, with his two brothers on board, but the darkness had prevented a recognition. Here he exchanged visits and gifts with the Moslem dignitaries, presenting cheeses and lemon-syrup, an article much used in lieu of wine, to the Governor and receiving from General Ramananama a shawl and a chain of gold. Here he made his first acquaintance with the Mahomedan sabbath by attending worship at the Mosque on Friday, February 10, and on February 13 set sail for Mozambique, then a Portuguese slave depot, where he paid his respects to Governor, the Major Don Antonio Jose de Mello, and opened the subject of improved commercial relations. Here he lived on board ship, remaining in port long enough to welcome the arrival of a new Governor from Lisbon, and to be urged to come ashore and take up his residence at the palace, and sailing March 10, for Zanzibar. The sight of deck-loads of Portuguese slaves filled him with unutterable loathing,—*"mostly children"*—his journal says, *"children from ten to fourteen years of age."* * * * *"But what can I say when I remember the millions in my own country !"*

At Zanzibar, as elsewhere, his arrival was made the occasion of demonstrations of good-will towards the great nation he was to represent with such success and honor and whose dignity he never failed to make respected. His official residence continued until 1844 and did not forbid him to take an active and lucrative interest in the commercial enterprises of the port. He even carried on extensive business transactions with the Sultan, and the latter did not hesitate to loan him large sums of money, at times, from

his ample treasury. Here he established and sustained the reputation for open-handed hospitality and a high standard of mercantile honor which characterized him through life. While enjoying the entire confidence and exceptional intimacy of His Highness, he was never weary of welcoming his countrymen whether naval officers, missionaries, scientists or tourists, to the courtesies of his roof. The eminent Dr. Charles Pickering, naturalist to the South Sea Exploring Expedition, commanded by Commodore Wilkes, was one of the many sojourners who made the consulate their home, and he records a grateful acknowledgment of his obligations to Mr. Waters in his famous report on the ethnology of the regions visited and explored.

After his return to America, the Sultan continued to send reminders of his regard from time to time, notably, as late as 1850, an Arab horse.

A private journal, kept by Mr. Waters during the first three years of his life at Zanzibar, when impressions of the new country were fresh, and the consulship an untried experiment, is full of romantic interest. It notes the arrival and clearance of Salem shipping, and contains amongst other things an original calendar of the rotation of Sunday evening services at the four Calvinistic churches of Salem, between Oct. 10, 1836 and May 10, 1840, that he "might know where his friends were passing the evening in worship together on every Sabbath." It glows in every page with the true missionary spirit to which he had pledged himself to the venerable Dr. Anderson, at their last interview before his departure. It details his frank and manly dealing with the masters of slave vessels with whom he came in contact,¹—his constant and tender

¹ He exchanged repeated civilities, in October, 1837, with the captain of the Spanish brig, "Scorpion," from Cadiz for Goa, which had put in for provisions. This Spanish captain proved to be a highly interesting person, but the nature and quantity of the supplies purchased proved him to be a slaver. He called to take leave of the Consul before sailing, and he, while wishing him personally every suc-

solicitude for the welfare of his aged mother,—the austere way in which he observed each recurring Sunday,—the pious memoirs and the ethical and theological reading sent out by his fast friend, Deacon Rufus Putnam, and others, in which he took delight,—the hymns of praise in which he lifted up his solitary voice in the wilderness,—the contagious enthusiasm with which he kept our national feasts, Thanksgiving, Independence Day, and the like, inviting guests of every nationality to his board, and even inspiring the Arab and English residents with something of his own patriotic joy,—his troubles in reconciling what he told the Sultan of the professed beliefs of the Christian world with what His Highness observed in his experience with Christians,—and his struggles to lead a life consistent with these professed beliefs even to the point of declining in one instance to receive at his house a shipmaster whose conduct he stamps as “unbecoming a man.” No small part of his time was consumed in selling the outward cargoes and procuring return freights for Salem craft which came and went at short intervals, and in weighing the ivory, turtle-shell and copal brought from the interior to the coast on the backs of slave-gangs straining under the lash of Arab drivers and chiefs. The entertainments on board ship tendered him by foreign and American officers, and the courtesies extended in recognition at the American consulate, are well described,¹ and his account

cess, and tendering him every business facility if he would come to Zanzibar with a cargo in which Mr. Waters could trade, added, as they shook hands, “I cannot wish you a prosperous voyage for you are engaged in a business which I hate from the heart.”

¹ A London merchant named Hunt, who had several vessels in the Zanzibar trade, and an agency there, arrived in his pleasure yacht, the brig “Sandwich,” in August, 1837, and in his business with the Sultan found it convenient to avail himself freely of the good offices of the American consulate. During his stay he made a dinner party in honor of the Consul.—had his five vessels, then in port, dressed out in bunting,—a salute to the Consul’s flag fired from the yacht and her yards manned, at his approach,—and did every thing in his power to give zest to

of his first reception at the Summer Palace of the Sultan, in August, 1837, gives so good a picture of Zanzibar life and surroundings that it cannot be omitted.

The Consul at half-past five in the morning was rowed in one of the Sultan's boats to the Residence at Matony, a new sea-side Palace two miles from the city, so as to be

the festivities, which closed some days later with a dinner at the consulate. In September, 1838, the United States Ship of War "John Adams," Captain Wyman, commander, visited Zanzibar, and on the fourteenth, which was Friday, the Mohamedan sabbath, the Sultan gave a dinner at the sea side palace to Captain Wyman and fourteen of his officers, with the Consul. The next day the party visited the summer palace and gardens. On Sunday, the sixteenth, divine service was held on board the "John Adams," and on Monday she was inspected by the Prince, when salutes were exchanged between the "John Adams" and a frigate of the Sultan.

With the American missionaries at Ceylon and Bombay, Mr. Waters kept in close communication. July 2, 1839, a party of them touched at Zanzibar in the brig "Waverly," Captain Ward, of and from Salem. On the national holiday, in other years, the consul had made such patriotic demonstrations as he was able, and was to have given a dinner on the Fourth, but the "Waverly" brought him news of the death of his brother Robert. On the Fourth of July, 1837, finding none of his countrymen in port, he made guests of all the English gentlemen he could find in Zanzibar and gave a dinner, at which six English officers were present, their vessels honoring the day with a display of flags, while he saluted the national colors with discharges of small arms from the roof of the consulate and threw up rockets in the evening. A year later, the brig "Rolla," his brother John commander, at sunrise, noon and sunset fired a salute which was answered by the British yacht "Sandwich" and an Arab frigate. But on July 4, 1839, the consul enjoyed a celebration much more to his liking.

Two days had passed in interchange of visits between the "Waverly" and the consulate,—a period of religious sympathy indeed refreshing. The morning of the Fourth was spent in a visit to the plantation of Syed Sulliman, a relative of His Highness and Governor of Zanzibar. The wife and daughters of the Governor received the ladies of the mission with marked attention and kindness. All the vessels in port were dressed out in their colors and the American, British and Arab flags were flying from the consulate flagstaff. A salute was fired at sunrise by the "Rolla," at noon, another by the bark "Augustus," Captain Millet, to which the Sultan's frigate replied, and rockets were thrown up in the evening. The Consul and Captain Ward called on the Sultan in return for a like attention from his Highness and the Prince on the third. Next day the missionaries and the ship-masters visited His Highness and the ladies were received by his family above stairs. He presented each of the four ladies of the missionary party with a cashmere shawl, which they hesitated at first to receive, but His Highness insisted. They then, on his invitation, inspected the yacht "Prince Regent," a present to the Sultan from the late King William IV of England. July seventh was Sunday, and they heard the first sermon ever preached at Zanzibar. The next day the party, in palanquins and on donkeys, visited the Summer Palace and enjoyed a ramble amongst the groves of palm, orange, clove and nutmeg. On the day following, July 9, the "Waverly" cleared for Muscat and Bombay, the Consul and Captain Millet sailing in her for a few miles down the harbor.

ready to start early and take the ride in the cool of the morning. Reaching the palace just after sunrise, he was received by the Sultan at the door and welcomed. His Highness had been ill during the night and excused himself from taking the ride to his gardens in the country. Breakfast was then served,—the coffee fine, and in cups of gold. The party was mounted at seven, consisting of the young prince, a youth of eighteen, two secretaries to the Sultan, several officers of the army and navy and a guard of sixteen soldiers in red coats and white trowsers. The Consul was placed in front, next the guard. The horses were Arabs of fine mettle. The roads were good, many birds were singing, and the appearance of the country was most delightful. Riding slowly they reached the plantation, some six miles out, and found a one-story country-seat of stone, plastered and whitened on the outside, pleasant of aspect and placed on a high hill which overlooks the country to a great distance. One feature of the delightful scene was the Sultan's great plantation of clove trees, two hundred thousand of them, set in rows a mile or more in length, twenty feet apart. The tree is of a most beautiful green and attains a height of about twenty feet. The air, for some distance, is strongly impregnated with the odor of cloves, recalling to the memory of the guest the "spicy breezes" in Bishop Heber's much admired missionary hymn. Cloves in large quantities were drying, spread about in the sun.¹ There were nutmeg and coffee trees too, which the Consul had never before seen, though he had already passed a night in the open air on one of the islands in the bay, under the shelter of the cocoa-palms. Orange groves and bananas were notable

¹ These great clove plantations seem to have been not uncommon. Capt. Has-
sen had one eight miles out in the country called "Salem," which Mr. Waters vis-
ited Oct. 15 and Dec. 21, 1839. It numbered twelve thousand clove trees.

features of this African scenery, but of course common to other regions also.

On returning at the close of the day, the Consul paid his respects to the Sultan at the Matony palace, and thanked him for the pleasure he had enjoyed. His Highness expressed satisfaction and added that he had given orders to have a horse in readiness for the Consul whenever he would ride, and also a guide to show him the most charming rides into the country.

On Jan. 11, 1840, Mr. Waters sailed from Zanzibar for a visit home in the Barque "Cavalier" of which his brother John was master. He had declined the Sultan's offer of a passage in a ship he was despatching to America. He arrived May 7, and spent four months in visiting friends in various parts of the country. He became a member of the East India Marine Society, Sept., 1840. He sailed again by the same vessel on her return voyage, Sept. 11, this time as the commercial agent of David Pingree, reaching his post, Jan. 8, 1841, and meeting here his brother William arrived a month before at Zanzibar by the Arab ship "Sultana." At the close of his official career he left Zanzibar for Bombay in October, 1844, and reached home by the overland route early in 1845, establishing himself for life soon after at the fine old homestead farm, which, from an early day and under many owners, had crowned the slightly and commanding eminence in North Beverly known as Cherry Hill.¹

This estate of one hundred and fifty or more acres, some of it lying on ground so high as to overlook the southern portion of Essex County, and some of it bordering on Wenham Pond, came into his hands in the spring of 1846 by purchase from Capt. Thomas Holmes of Salem, and

¹This was one of the sites which the State sought to purchase at the time of locating the Insane Asylum now placed on Hawthorne Hill in Danvers.

the new proprietor soon became engrossed in the development and improvement of it.

The first grantee of this tract had been one William Allford (or Alvord) of the numerous and wealthy guild of "Skinners", in London, a man of some consideration in the Colony, he having been selected in mid-summer 1635, with Captain Endecott, on a committee of three to assign convenient places for shops and trades in Salem. He arrived in the summer of 1634 bringing a letter of introduction to John Winthrop, jr., which described him as an honest man, well known to Mr Cotton. His grant was made *Ann^o 1636* and reads thus in the town records; "Mr Alford (200 acres vot.) where it is allotted to him provided that In Case he dep't to Leaue it desiring noe aduantag by it." "Where it is allotted" appears in votes of 10th m^o 1643, 10th m^o 1650 and 1st m^o 1653.

He was driven away before 1638 by persecutions to which his Antinomian heresies and unsound and alarming views on pædo-baptism subjected him, and was thus able to sell this farm which, by the conditions of his grant, had he left it willingly, he would have been forbidden to do. The act of the Court of November, 1637, for "disarming of y^e opinionists," described him as Mr Alfoot and required him, with four other Salem men named, to deliver up their arms to Lieft. Danfort. If no deed from him is to be found recorded, it should be remembered that the act providing for a registry of deeds was only passed in 1640 and also that the peculiar condition of his grant may have made publicity seem undesirable. At any rate the estate, first known by the English settlers as Alford's or Allvord's Hill and then for a while as Long Hill, is inventoried thus amongst the "temporall estates," late of Henry Herrick, deceased, March 28, 1671. "The ffarme bought of Mr Allford, containeing 2 hundred acres—£300,"

and it passed by his will to three sons, of whom Upham finds Joseph, the fifth son, to have been in possession in 1692. Alford died in 1677.

This Henry Herrick appears to have been the progenitor of our great Herrick family. He is thought to have been in Virginia before coming to Massachusetts Bay, and he joined the First Church in Salem in 1629. He was the fifth son of that famous courtier, diplomatist, Cheap-side goldsmith, Queen Elizabeth's Turkish Ambassador, money-lender to King James, and long-time member of parliament, Sir William Herrick of Beau Manor Park in Leicestershire, the uncle of the poet.¹ Upham finds reason to think that Joseph before 1692 occupied the Cherry Hill property which lies at the extreme southeast corner of the region infected by the witchcraft frenzy. He was at various times a militia corporal, a witchcraft constable, a town representative, a parish magnate, and a West India merchant, and was known at the close of his career for some occult reason as Governor Herrick. Before the miserable delusion had passed away, he did what he could to recant and to vindicate the memory of some of its victims. Neither he nor his father had taken more kindly than had Alford to the church methods of the day, for Henry Herrick and his wife Edith were fined for giving aid and comfort to a "person excommunicate" and Joseph was at one time in much disfavor for his skepticism as to the prevailing views of Diabolism and Satanic interference.²

Since the death of Governor Joseph Herrick in 1718, Cherry Hill has been described in a series of wills, deeds, inventories and indentures which give a rare picture of

¹ See Herrick Genealogy, Revised Edition of 1885, pp. 7-13, 17-19, 418; Hist. Coll. Essex Inst., Vol. IV, pp. 266-7.

² Herrick Genealogy, pp. 210-14, 363-7. Upham's History of Witchcraft and Salem Village, Vol. I, map and pp. 66, 153-4, 269-70. *Ib.*, Vol. II, pp. 12, 28, 272. Stone's History of Beverly, pp. 256-7. Mass. Hist. Coll., 6th Series, Vol. I, p. 15.

the domestic life of the times, as the homestead successively of his son and grandson, both named Rufus, the former of whom was again the fifth child by his second marriage with Mary Endicott, [by whom he also had daughters, Tryphosa and Tryphena], and the latter of whom, in 1758, conveyed his interest to Capt. George Dodge; and through him, with Israel and Deacon Joshua Dodge, and their grantees, Jonathan Conant,¹ and others, it came into the possession, towards the close of the century, of Col. Israel Thorndike of Beverly.² From him it passed through the intermediate hands of John Safford of Hamilton and Barnabas Dodge of Beverly, to Henry, an elder brother of Capt. Joseph White of Salem, and on the death of the former in 1825, to Capt. Joseph White. He enjoyed it but a few years, spending the afternoon before his tragic death April 6, 1830,³ in a visit to the farm. Indeed one of the plots for taking his life was to overturn him in his chaise after dark, while riding home alone from Cherry Hill as he often did, and to make it appear that his death had resulted from accident. Hon. Stephen White, his brother Henry's son and his devisee, was the next owner of Cherry Hill and, for some years, a royal hospitality prevailed there. Nathaniel P. Willis was a frequent guest, and so was Daniel Webster. From him the estate passed to Col. Amos Shelden, who leased it for a time as a manual labor school to an Institution numbering some sixty

¹A marked character in his day; the last of the name to occupy the old Roger Conant Homestead, which stood near Kittredge's Crossing in Beverly; a member of the Committee of Correspondence and Safety; also a selectman and one of the town representatives of the year 1780, the first year of the State Constitution. See *History and Genealogy of the Conant Family*, pp. 118, 226-8.

²See *Stone's History of Beverly*, pp. 130-2 and *Quincy's History of Harvard University*, Vol. II, pp. 411-14, 596. *Ward's Journal and Letters of Samuel Curwen*, (4th Ed.) pp. 661-4.

³See works of Daniel Webster, Vol. VI, pp. 41-51. *Stone's Hist. Beverly*, p. 9.

pupils and incorporated as "The New England Christian Academy."¹ Hon. David Pingree owned Cherry Hill next, and after him Capt. John Hammond and then Capt. Thomas Holmes who, in 1846, conveyed it to Mr. Waters.²

The new proprietor removed every building, standing on the property, save a single tool-shop, replacing them with ample barns, out-buildings and offices and a modern house and converting the tool-shop, placed in a new location, into a dwelling house for farm-hands. Some of these buildings were the growth of recent years and of the manual labor experiment, but some of them were of an interesting antiquity. The house itself was standing in 1758, for in demolishing it, in June, 1852, Mr. Waters found a slab of board, some four feet long and nineteen inches wide, supposed to have served as the sill or lintel of a dormer window, and still preserved in the family of Deacon Saml. P. Fowler, on which were roughly carved the characters "R×H× 1758." Rufus was the last of the Herricks to occupy it, and 1758 was the year in which he sold the estate out of the Herrick family—perhaps a bit of sentiment,

¹ Hist. Coll. Essex Inst., Vol. VI, p. 84.

²Transfers of this property since it left the Herrick family will be found recorded in the following deeds, for citations of which the Essex Institute is largely indebted to the courtesy of Hon. John I. Baker of Beverly and of Daniel N. Crowley, Esq., of Danvers. See Essex Deeds, Southern District.

DEED	LIB.	FOL.	DEED	LIB.	FOL.
Herricks to Dodge	105	119-21	Safford & Dodge to White	170	276-7
Dodge to Conant	155	148	Heirs of Henry to Stephen and Joseph White	246	254
Raymond to Conant	155	148	Heirs of Joseph to Stephen White	275	108-246
Conant to Thorndike	155	148-9	Stephen White to McIntier	275	247
Dodges to Trow	137	228	Stephen White to McIntier	277	8-9
Dodges to Trow	142	210	McIntier to Shelden	285	262-4
Trow to Thorndike	155	149	Shelden to Pingree	300	183
Trow to Thorndike	156	50	Shelden to Pingree	306	21
Batchelders to Thorndike	156	49	Shelden to Pingree	308	3
Warren to Thorndike	158	201	Pingree to Hammond	318	26
Felton to Thorndike	161	179	Hammond to Holmes	364	217
Porter to Thorndike	166	174	Holmes to Waters	364	218
Thorndike to Safford & Dodge	165	240			

this rude inscription, on taking leave of the ancestral birth-place. The homestead had a gambrel roof, lutheran windows and a porch-chamber. It was a dignified old house; a rather good type of the better class of colonial or provincial architecture, and seemed worthy, when it disappeared, of a longer life.¹

From an observatory on the modern house, with the aid of a powerful glass, always kept mounted on a swivel and ready for use, a magnificent panorama of inland and ocean scenery is disclosed which, together with the interesting traditions of the place and the ready welcome of its genial host, made Cherry Hill a favorite resort with all his intimates. Salmon P. Chase, while Secretary of the Treasury and afterwards Chief Justice, rarely allowed a summer to go by without passing some weeks of it under this hospitable roof, and was visiting Mr. Waters on July 27, 1864, when a Field meeting of the Institute occurred on a part of the grounds near Wenham Pond, and sent a message of regret that his engagements did not permit him to be present at the meeting.²

Mr. Waters was open-hearted, courageous, public spirited and patriotic. His sympathies were broad and warm, his charities were unstinted, and it has been well said of him that where his heart was, head, hand and purse went along with it. He conducted a voluminous and world-wide correspondence with all sorts and conditions of men. On Jan. 6, 1860, he presided at Mechanic Hall in Salem over a mass-meeting of citizens interested in the relief of the surviving members of the family of John Brown, which was addressed by James Freeman Clarke, Ralph Waldo

¹ See will of Henry, Ipswich County Court Records, 1666-1682, pp. 136-8; will of Joseph, Essex Probate Records, Book 312, Leaf 172-4; will of Rutus, *Ibid*, Book 328, Leaf 260-4; Essex Deeds, Lib. 87, fol. 42.

² Proceedings Essex Inst., Vol. IV, pp. 47-9, and Hist. Coll. Essex Inst., Vol. VI, p. 151.

Emerson and Wendell Phillips in person, and in writing by John A. Andrew and John G. Whittier. In February, 1861, he was commissioned by Gov. Andrew, with six other distinguished sons of Massachusetts, to represent the Commonwealth in the so-called Peace Conference which sat at Washington on the invitation of the State of Virginia.

Mr. Waters was for many years a member of the Essex Agricultural Society, being chosen a trustee for 1848 and the nine years succeeding, and was always active on its committees and in promoting the yearly autumnal exhibitions of the Society.

He was an original member of the Essex Institute at its formation in 1848, having joined the Essex Historical Society in 1846 and the Essex County Natural History Society in 1847. During his residence abroad, he had occasionally forwarded contributions to the cabinets of the society last named, at a time when friends were none too many, and science struggled hard, and no gift was thought so trivial as to be unwelcome.

An appreciative and discriminating tribute, published in the Salem Gazette on the day following his death, has the added value of having been penned under the eye, if not indeed by the hand of a venerable contemporary and life-long friend, the senior editor, Hon. Caleb Foote. A few passages taken from it will fitly close this notice.

"The death of Richard Palmer Waters," says the Gazette of May 20, "removes from our community and neighborhood a person of a very marked and interesting character, of most generous instincts and habits, of deep religious principles and feelings, and the most thorough devotion to his public and private duties. He was one of the frankest and most outspoken of men, of great natural impetuosity and ardor—never withholding his sentiments, and urging them with all the fire of his nature, with vehemence of voice and action and ready speech.

"Although he held no political position, he was called upon to perform important duties in the business community. For a long time he was a Director of the Naumkeag Bank, from which he retired five years ago. He retired from the Presidency of the Naumkeag Steam Cotton Company at the annual election in January last, but remained upon the board of directors.

* * * * *

"With his natural characteristics and surroundings, he could not have failed to be an ardent anti-slavery man, going to the farthest extremes in his outspoken anger against what he considered 'the sum of all villanies'; but retaining cordial good will and intimate relations with old friends who could not, till years afterward, sympathize in his position.

* * * * *

"For several years the health of Mr. Waters had been failing, and those who had seen him of late have thought his end could not be distant. For a year past he had been subject to sudden attacks of dizziness which instantly brought him insensible to the floor or ground. On Wednesday morning last he had been, as usual, to his barn, to take a look at his cattle, and, after returning to his house, he was seized with a paralytic attack, and continued unconscious till 11 o'clock on Thursday, when his life ended. In giving to a friend the date of his birth, Mr. Waters added these words 'Grateful to God for unnumbered mercies and a most happy life at home and abroad, I await Divine Providence with cheerful hope and confidence for the future as I have done in the past.'"



